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OCTOBER 1971
VOL. 75, NO. 1

POLITICIANS And POLLUTION

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H. Russell Kay
Editor

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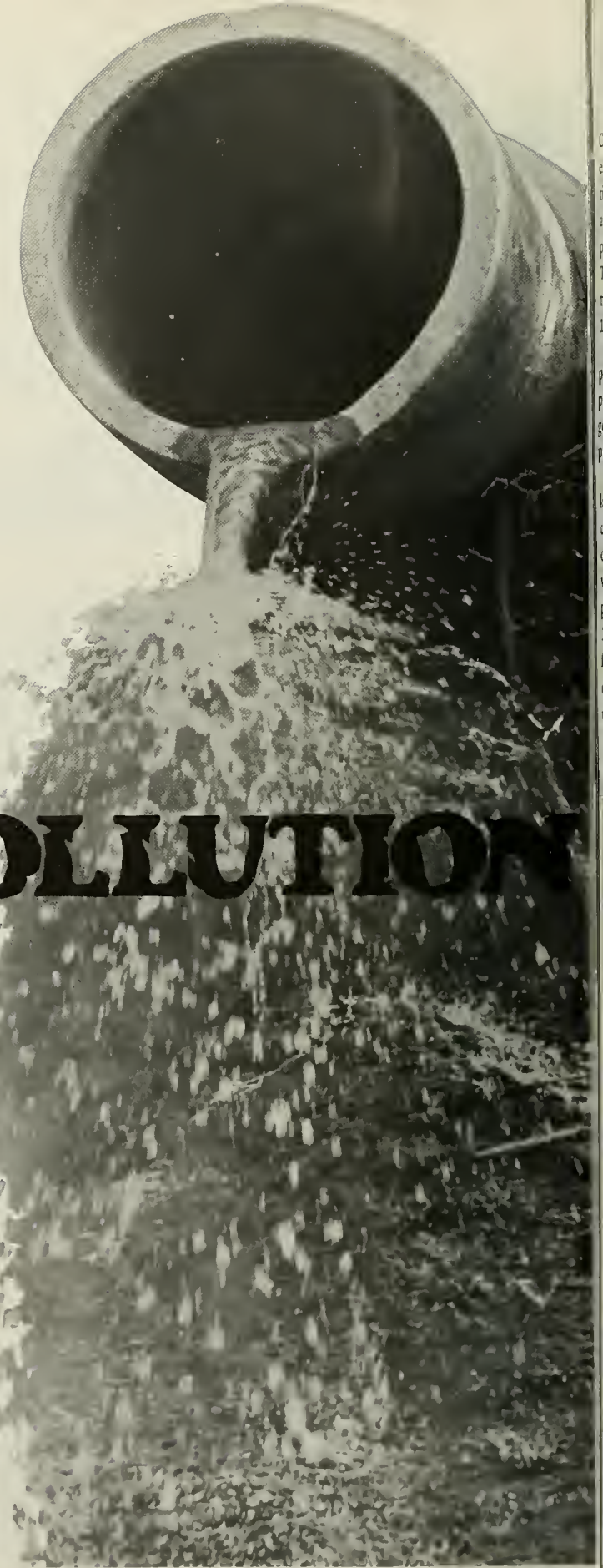


POLITICIANS *and* POLLUTION

by Kenneth H. Maymon, '7(

We have a serious pollution problem in this country. Our "friendly" politicians would have us believe that the only solution is to spend additional huge sums of money. I maintain that a bigger problem is to somehow turn the politician of today into a fair-minded, thinking individual.

Today we hear a lot of flowery talk and eloquent rhetoric concerning pollution from the halls of Congress. On the surface, this might give the impression of sincere concern. On closer examination, however, we find that while expressing concern over pollution the same congressmen are pushing their pet projects through Congress with little thought to the welfare of the nation.

Last year the governor, senators, and representatives of the state of New Hampshire were shocked and upset when the federal government decided not to spend millions of dollars to build a highway through the White Mountains. It would have been wasted money, I feel, and would have been detrimental to the present wilderness character of the region. That money is better not spent. Who would have benefited from the highway? Businessmen and the state economy? I doubt this. People are drawn to the area by its tranquil and natural beauty. It would be spoiled by the rush of superhighway travel; more people could get there quicker, leave their trash, and get out just as quickly. In time the area would lose its natural attraction.

The Bureau of Public Roads, now in the Department of Commerce, is one of the principal instruments of highway extension. The bureau, which is not sensitive to conservation needs, is the source of much mischief. The desire to get a road of given dimensions through an area at the lowest possible cost often leads to cruel sacrifice of our resources. The Black Hills of South Dakota once had hundreds of trout streams; highway construction has destroyed all but 160 miles of them.

Congress would have us believe that the solution to our problem is just a matter of money and legislation, that people and business are the main offenders. Actually, the government as a body is an equal partner in this crime of pollution.

Government owned and operated facilities pollute our land, air, and water. In 1965, Federal installations discharged 46 million gallons per day of untreated sewage directly into surface water or on the ground. Radioactive waste from uranium ore mills is becoming a serious problem. These are operated by the government. Early in 1970 there was a great deal of concern over buried tanks full of radioactive waste on the West Coast. Apparently the decision has been made to bury this "hot" material in tanks underground. The idea seems reasonable as a temporary measure — but not in an area where there is a major fault in the earth's crust. It would only take a little shifting of the earth to rupture these tanks and spill the radioactivity into the earth and ground water. In 1958 the Animas River in New Mexico and Colorado was found to be running at high levels of radioactivity from the mills operated for the government by Vanadium Corp. of America. It seems strange that a government which can spend huge sums of money to study peanuts and things equally trivial is not directing its attention to sponsoring work to investigate ways and means to dispose of or neutralize radioactive materials. Here is a good example of lobbyists at work. We seem to be more interested in peanuts than in the best interests of our country.

There are now better than 30 different federal agencies and commissions concerned with water. Some of these are staring at the same problem but from different angles. There are some interested in draining farmland and swamps, others are interested in irrigation and flooding. Sometimes they are working on the same geographic area. With these diametrically opposed postures and the top-heavy bureaucracy, we find the government cannot pull itself together and move. It simply stares or debates.

In 1908, President Theodore Roosevelt said that the needs of river improvement should be met without further delay. Here we are in 1971 still dilly-dallying and talking. In this 63-year period we have proceeded to almost hopelessly pollute our rivers and streams. Our presidents all face the same problem and their reactions have been almost universally the same: appoint an advisory committee. The committees usually suggest appointment of other committees, to review and criticize the other reports. More high-paying jobs, more talk and paper with no action. Maybe part of our solution would be to devise some means to control the birth rate of government committees.

Vote-hungry opposing politicians will promise and fight for the moon if they feel it will gain them votes. Pork-barrel legislation and "function" blinded government agencies are at the heart of our problem. Some politicians seem to be in Congress for only one thing: to perpetuate themselves rather than to work for a better nation. Somehow these men must be weeded out. If the resources expended on wasteful government projects and studies were diverted for pollution abatement and control, I feel that the additional cost to the nation for an effective anti-pollution campaign would be nominal.

With the problem before us, it is a shame to see billions of dollars being spent on projects for purely political, almost frivolous reasons. The Garrison-Diversion project of 1965 is a good example. This is strictly an agricultural deal to divert water from the Missouri river to irrigate 250,000 acres of mostly "class 3" land in North Dakota at a cost of $250 million. This is the poorest land considered for irrigation. What does it mean on a single farm basis? On a 320 acre farm, which is the maximum amount allowed under irrigation regulations to a man and wife, this would require spending $256,000. This is enough to give an $8,000 gift each year for 30 years with the man and wife doing nothing. Actually the government would save if they gave the money rather than irrigate because they would then not have to pay other farmers to not grow the same crops.

Another example is the Frying Pan water diversion project in Colorado to cost $170 million. This project is for irrigation to increase the alfalfa crop of Colorado. This is just more waste because there are about a million acres of alfalfa in the soil bank that no one is allowed to cut. It should also be noted that alfalfa is a notorious water hog.

And then there is the Arkansas River navigation project, to cost $1.4 billion. This would be to build navigable canals through an area where the soil is extremely fragile and will cause silting. This project was justified on the basis of a faulty cost: benefits ratio. Projected barge traffic in canned meat of 12 times the then-present total barge traffic plus a large amount for increase in the Arkansas canned fruit business were used on the plus side of the cost: benefits ratio. Arkansas has no canned fruit business and has no plans for one. Also, this type of project is usually evaluated on a 50-year usable life basis. This one was evaluated on the basis of 100 years. Somebody really wanted this project; maybe he has plans for cornering the canned fruit market in Arkansas.

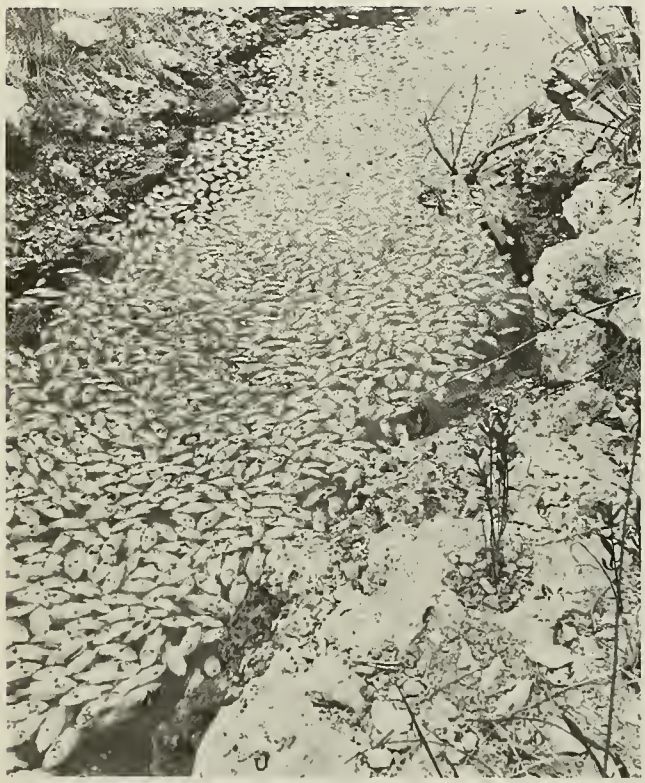
In the mid-1960's $41 million was spent to build a deep-water canal to nowhere in San Francisco. It was promoted to provide more dockage in the bay area. Actually what is needed are more dockage fees in San Francisco bay itself.

Walter Judd of Minnesota used to brag about wheedling $30.3 million from the federal government for dams and

locks to hike the water of Saint Anthony's Falls in Minnesota for a purpose that defies detection.

The role of the federal government is weak and confused. In addition to the waste and spoilage caused by many of their projects, the many tentacles of the bureaucratic federal octopus seem to be working against one another rather than together.

The public health service traced a huge fish kill in the Mississippi River in 1960 to DDT and similar pesticides. The secretary of agriculture took the stand that the farmer was not the culprit. He found it easy to imply that industrial waste, not pesticides, was the main cause and stated that if any pesticides did kill any fish it was due to the mistakes of the manufacturer. Here we find the Department of Agriculture, the Department of Health, Education and Welfare, and the Department of Interior paralyzed, each spending huge sums on endless investigations to clear their own special interest.



The Army Corps of Engineers has a mania for building hydroelectric installations. Many of these cannot be economically justified for power production and unless they can be shown to be flood preventative in nature, they represent river destruction rather then conservation.

For 180 miles east of Fort Benton, Montana, the upper Missouri now flows as it did back when Lewis and Clark made their way upstream. The Corps of engineers is now proposing that a $243 million dam be built to permit production of hydroelectric power. The cost per kilowatt hour would exceed that of a conventional steam installation. The project is being justified on the basis of its added capability of flood prevention and control. This seems strange because there has been no past history of flooding in the area or downstream. Wasted money? Maybe.

The National Park Service has water values in its charge. The Bureau of Reclamation is working to get a fluctuating reservoir into the Kings Canyon National Park as well as dams in the Dinosaur National movement. If these are put through, our national parks will be grievously damaged.

Repeated conflict has prevailed between various federal agencies each with a selfish motive.

Recently a Federal air pollution team visited here at Worcester Polytechnic Institute. The statement has been made that this group was interested only in air pollution — not land, water, or any other kind of pollution. This is ridiculous, but typical of the government approach. The problems of pollution are not separate. A systems approach is required. The air, water, and land pollution problems are all interrelated. Disposal of solid waste can cause air and land pollution, and reduction of air pollution can lead to water and land pollution.

The outfit wielding the most power and persuasion, the biggest staff and best organized lobby gets its way. Powerful lobbies in Congress are interested in promoting federal spending for their special fields. I wonder if, as they are presently set up, lobbies operate in the best interest of the country as a whole.

Two of the most powerful lobbies in Congress are the Rivers and Harbors Congress, which is an outside of government torch carrier for the Corps of Engineers, and the National Reclamation Association which does the same for the Reclamation Bureau. They are dedicated to promoting the type of operations of these two Federal Agencies with slight regard for others.

The tendency in this machine age on federal, state, and local levels often seems to be to wipe out every acre of original wilderness. And with modern machines and atomic explosives to remake the face of the earth, the meadows, the swamps, the wooded alcove, and their inhabitants must surrender. This must stop.

Walden Pond, made famous by Thoreau was given to Massachusetts in trust to preserve in perpetuity. Today it is no peaceful pool but a bathing beach. Across the road are hot dog stands and trailer camps. The commissioners in charge of it planned further "improvements" such as concrete ramps for the beach, re-shaping the pond and constructing concrete bath houses. Fortunately the Supreme Court of Massachusetts stopped these "improvements." But if the bureaucrats had their way we would have lost another scenic treasure.

Staten Island, home of the 260-acre Davis wildlife refuge is being developed as a result of the easy access provided by the Verrazaro-Narrows Bridge. The wildlife is gradually being choked out. The Bureau of Reclamation has blocked off free passage of ocean water to the marshes in the area and water-fowl will not live in a stagnant place.

Our federal policies are inconsistent. We spend millions acquiring the Everglades, a swamp national park in Florida

whose very existence depends on the flow of sweet water. We then spend more millions in drawing down that sweet water to serve other interests, thereby jeopardizing the park.

Resource management and unification of effort are sadly lacking in our present arrangement. Two good examples of what can be done come from Europe.

The Ruhr Association was formed of all communities on the Ruhr River. Here, they have established effective control of pollution rather than trying to establish standards or treatment requirements and trying to enforce them. The plan is that every town and industrial plant be charged a stiff levy or tax, proportional to the amount of pollution they deliver to the river. The assay is based on the biomedical oxygen demand, which is a measure of the capability of a given stream to clean itself. We now find that the Ruhr basin has cleaned itself up.

The other case is in Essen, Germany. The solid waste is dried, included with the city's normal garbage and used as fuel in a power plant.

Last year plans were unveiled for a joint study project between the government and industry. This is a step in the right direction. This project is to design and build a unique (for America) power plant at General Electric, Lynn River Works. The project is to be executed by General Electric with the Cooperation of the City of Lynn and the U.S. Health, Education and Welfare Department. It will look into the practicality of building a combined refuse-incineration and power-generation plant at the River Works to serve both General Electric and the city. The combined trash, 480,000 pounds per day would fuel a refuse boiler to produce 10,000 KW daily. This would be trash disposal with a return. The refuse power plant is designed with electronic precipitation and scrubbing devices that keep noxious gases and fly ash from polluting the air.

We have a severe pollution problem, but the directions given up to now by the federal government are in the wrong direction. More money is not the answer. First, the governmental agencies and bureaus must be reorganized and restaffed to work as a unified team in the interest of the nation as a whole, not in the interest of the bureau involved. Second, industry should be enlisted as a partner with government to a greater extent rather than being considered the enemy in this war on pollution. Third, we should consider new approaches such as in Essen and the Ruhr basin. If we measure the tax of an industry or community by the amount of pollution emitted, I am sure we would be surprised at the job that can be done by that industry or area.

Finally, our senators and representatives along with our state and local officials must change their way of thinking. Self-interest and regional special interests should be made secondary considerations. Legislation is in some cases adding to our pollution problems and is wasting tremendous sums of money. That money used more wisely can be the lion's share of the expense of cleaning up our nation. We can win this war on pollution and without the need for huge new government expenditures.

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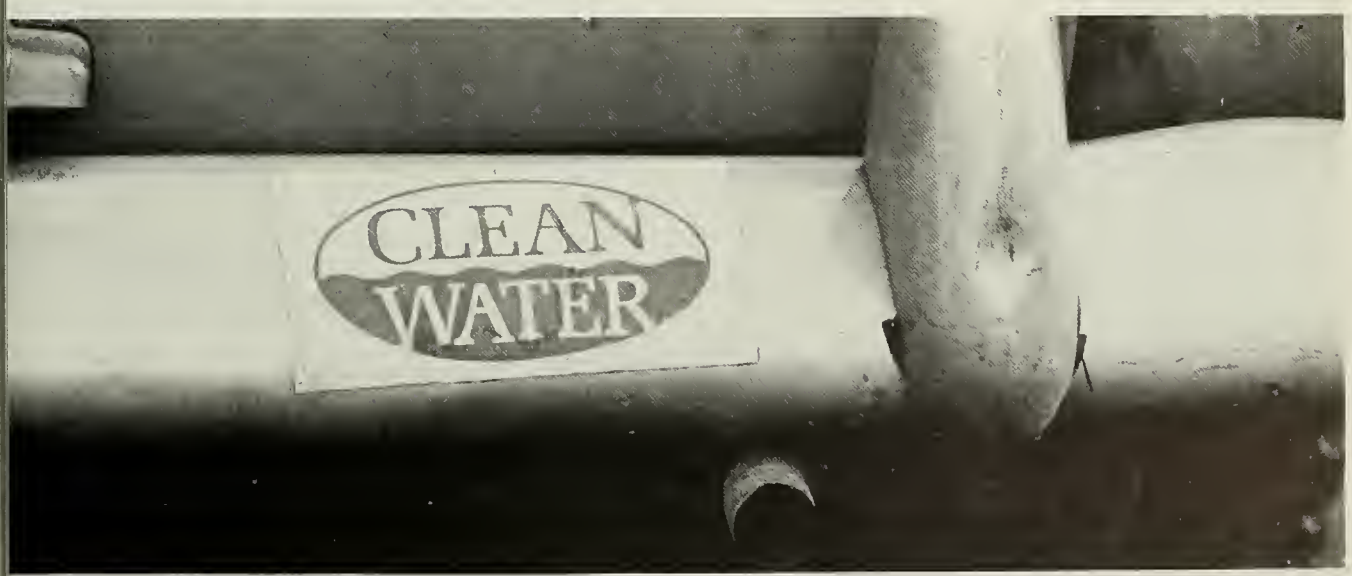

Indra

THE THUNDER AND LIGHTNING OF JOE GOULART

THE STATE of Rhode Island has one registered automobile manufacturer. The automobile is a 160-mph, two-seater sports car; the manufacturer is Joseph F. Goulart, who received his mechanical engineering degree from WPI in 1967. During the past five years, Joe has invested some 7,000 hours of labor and some $15,000 in parts in the construction and development of the car. He calls it Indra, after a Hindu god of thunder and lightning. "It's a distinctly male car," Joe says, "and I named it after a distinctly male god. I didn't want to follow the Detroit practice and characterize it as an animal."

Automobile product development, says the 27-year-old engineer, "is the only thing I ever really wanted to do. It's the reason I came to WPI after starting out as a math major at Providence College." After graduation, Goulart worked for Wyman-Gordon as a product development engineer for three years, but every evening and Saturday were spent working on the car. Ten months ago, Joe quit his job to devote full time to the Indra's development.

The car's fiberglass body, painted a rich metallic copper-brown, was designed while Joe was a WPI student. He and a friend put over 1,500 hours into building a 1/8 scale model, which was wind-tunnel tested on campus. All the body construction and molding were done by Goulart himself. Underneath the body is a highly modified Corvette frame. An American Motors 390-cubic-inch V-8 engine sits behind the passenger compartment and is hooked up to a $1,500 German-made ZF five-speed transaxle. All four wheels are independently suspended, with outboard disc brakes and 8-inch-wide radial tires.

The AM engine seems a strange choice to some, but Joe picked it for its light weight and high torque as compared to other engines of similar size. Rated at 315 hp in stock form, the engine has been "blueprinted" — rebuilt and rebalanced to its design specifications (i.e., before mass-production tolerances) — and slightly modified by Joe, and there is ample power to drive the 3000-pound car. A few years ago, the British Aston Martin — perhaps best known to the general public as the car James Bond drove in the film *Goldfinger* — was advertised as able to do 0 to 100 *and stop* in 24 seconds. The Indra will do the same in less than 20 seconds.

Top speed is estimated as 160 mph, although Joe has only had the car up to 140. An amalgam of highway car with the best current racing technology, the Indra has been compared favorably with the $18,000+ Ferrari and the $10,000 de Tomaso Pantera.

The Indra's designer/builder gave the editor a short ride. After settling down behind the walnut dashboard and console, buckling on the racing-type seat belt and shoulder harness, the first thing one notices is the *lowness* of it all. You are literally looking up at every other car on the road. Then the engine is fired up, just about a foot behind your back, and the Indra moves out. That the car is fast is obvious and expected; but the combination of lowness, speed, and the strange rapping of the engine behind you combine to produce a visceral experience that leaves you wanting more.

The car is awesomely stable, whether going straight or cornering at what seem impossible speeds; it is probably more stable, certainly "safer" and more maneuverable, at 85 than the average American passenger car is at 25. During

the ride, Joe explained how he tried five different sets of front springs, three sets of rear springs, as well as adjustments on the Koni shock absorbers, before arriving at the present set-up. With its mid-engine location, the car carries 54 percent of its weight on the rear wheels, an important factor in its precise handling.

The ride also pointed up one of the few shortcomings of the Indra: low ground clearance and limited suspension travel, combined with the stiff springing and ultra-low-profile tires, make crossing railroad tracks and bumps a painful experience. It doesn't hurt and isn't physically uncomfortable, mind, but the sudden shock as the suspension comes up against its stops produces a sound and feeling that is unnerving at first. But in spite of all this, the Indra is impressively rattle-free.

On the first model — there has been so much development work in the past year that Joe now calls it the Mk. 2 version — a curious problem came to light. Transmission fluid was dripping on the driver's left foot, despite the fact that the engine is behind the driver and the gearbox behind the engine. It seems that the fluid was running up the 14-foot-long speedometer cable, and after the speedometer filled up the fluid leaked out and onto the foot! Now the car has a custom-built electronic speedometer (with a million-mile odometer) which is guaranteed by its Worcester manufacturer (Barbour-Stockwell) for 200,000 miles.

Joe seems to have been the first person to attempt to register an independently built automobile in Rhode Island, and no one at the Registry of Motor Vehicles knew what to do with his application. He was passed up the ladder until he was finally given permission to assign the car a serial number himself. The registrar explained that serial numbers are usually coded to show such things as country and date of manufacture, body style, etc. So Joe put together a serial-number code so complete it even indicated the type of camshaft in the engine. Unfortunately, this 15-digit number was too long for the RMV's computer, which could only cope with 13 digits. Joe calmly pulled the application back and crossed off the first three digits. "The chief investigator's mouth dropped," remembers Goulart, "but the letter I had from the registrar was authorization enough to satisfy the requirements." The car's license plate reads, fittingly, INDRA.

Even the name represents a bit of a problem now. Joe has been working on Indra for some five years. You can imagine his surprise when the Italian firm of Intermeccanica announced this spring it was marketing a sports car (with Opel running gear) called the Indra. Until and unless the European version is sold in the United States, there will continue to be two different cars called Indra.

Goulart would like to sell the car and build more; all he needs is a buyer. He had someone lined up, but the would-be purchaser had to back out when his own business was hit hard by the economic slump. Joe's future plans are indefinite. He would like to remain in automotive product development, and has talked with certain of the auto manufacturers, but things are still up in the air.

There are few graduate engineers around who would be capable of building a car such as the Indra alone. Still fewer of those who could would even begin such a project. But Indra has been the focal point of Joe Goulart's life to date, and every detail of the car reflects the care and determination of the builder. Joe refers to the car as his "three-dimensional PhD. . . Even if it were to burn down tomorrow — and it isn't insured against that — I would still feel that it was worth it, and I would do it all over again."

The Next 100 Years

SCIENCE & TECHNIQUES OF CASTING

biomedical instrumentation

Air Pollution Measurements

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Physics of Low

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DRAWING A NUDE

INTERSESSION 1972

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INTERSESSION 1972

An integral part of the WPI academic year, Intersession represents a bold new addition to WPI's offerings. Furthermore, participation is not limited to WPI students but is open to the interested public. A special *Alumni Discount* rate has been arranged to enable alumni to pursue their interests and return to the WPI campus.

Intersession is intended to be an educational experience of broad scope, wherein participants may take short courses designed to further their professional competence, advance their avocational interests, offer intellectual enrichment, or provide personal enjoyment. During the three-week period, some students may wish to pursue related topics while others sample experiences from totally different categories.

Many Intersession courses carry optional credit (1 credit hour per course, with additional work required).

Most courses will be presented in concentrated, three-day sessions starting Tuesday mornings and ending Thursday afternoons with evening sessions on Tuesday and Wednesday evenings. Some courses have different schedules, however, so be sure to check the official course description. Many courses have limited enrollment, and these are filled on a first-come first-served basis. If you are interested, be sure and inquire NOW.

A few course descriptions are given below. In each case, the letter A, B, or C indicates the week the course is offered. (A-January 11-13; B-January 18-20; C-January 25-27.) An asterisk (*) indicates that the course is available for credit. On the reverse side of this page, a complete listing of all course titles for each week is given. If you want more details on any courses, just send in the coupon indicating the numbers of the courses in which you are interested.

REMEMBER; January 11-13, 18-20, 25-27
The regular non-WPI-student rate is $110.00. For alumni, the price is only $75.00 for the first course. (For certain courses, an extra fee to cover special materials and/or transportation is assessed all participants.)

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For: Students and businessmen
Purpose: To explore the problems and solutions of starting, financing and managing a small business.
Advance Preparation Expected: Reading list available from Prof. Mancuso
Credit Work Required: Outside reading
Limit: 25 students, 50 businessmen
Extra Fee: Meals for students who desire to dine with the group on W and Th.
Schedule: Tu — student participants: special orientation on small business operations, 8:00 am-9:00 pm
W — all participants: How to Finance a Small Business, 9:00am-5:00pm

Please send me information on the following courses:

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THE FUTURE

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ABC201* Fundamentals of fluidics
B219* Introduction to systems engineering concepts
ABC202 Refresher course for EIT examination
B220 Remedial and basic DC and AC circuits
A215* Survey of control engineering

Biomedical

B221* Biomedical instrumentation
C211 Hospital safety workshop
C212* Use of brain waves (EEG) in behavioral studies

Computer Applications and Languages

AB211* BASIC programming
C213* Computer peripherals
B222* Computer simulation of physical systems
C214 Hybrid computation use of EAI-680 and PDP-7
A216* Integrated civil engineering systems (ICES)
A217 Introductory analog computer programming
BC214* List processing with SNOBOL
A218 Management information systems
B223* Mini computers

Design

C215 Cam design
A219 The engineering product design process
C216* Mechanical design synthesis with industrial examples

Ecology and Resource Management

C217* Air pollution measurements
B224 Community impact of large scale civil engineering works
A220* Control of environmental sound and noise
B225* Environmental problems
B226* Industrial waste treatment
C218 New approaches to residential development
A221* Problems of urban housing
C219* Solid waste management
B227* Theology encounters ecology
A203*,B203*,C203* Urban car development

Electronics

A222 Basic electronic circuits
C220 Design and testing of M.F. directional antenna arrays
B228* High quality reproduction of sound
C221 Introduction to microwaves and antennas
B229 Radio communications for the amateur
B230* Television
B231* Topics in semiconductor physics with laboratory demonstrations

Materials

A223* Experimental stress analysis workshop
BC215* Introduction to materials processing
A224* Linear viscoelasticity
A225* Photoelasticity
B232* Rheology of fluids
A226* Science and techniques of casting
A227* Techniques of analysis for defects
B233* X-ray diffraction analysis

Nuclear

A228* Nuclear power reactor siting considerations
B234 Nuclear technology
A229 Radioactive tracer techniques and counting procedures

Power Systems

B235 Basic applications of motors
C222 Power generation and its future

Processes

A230* Industrial separation and recovery of natural salts
B236* Less common separation techniques in chemical engineering

INSTRUMENTATION

A231 Electronic distance measuring instruments
A232* Fluid metering
C223* Instrumentation for materials processing applications
C224* Nuclear magnetic resonance spectroscopy
C225* Organic chromatographic techniques
A233 Practical infrared spectroscopy
B237* Use of chromatography and mass spectrometry

SCIENCE

Chemistry and Biology

A234* Chemistry in agriculture (or, How does your garden grow?)
A236* Interpretation of phase diagrams
C226* Morphological crystallography
B238* Phase equilibria in multi-component systems
C227* Qualitative inorganic analysis
ABC204* Qualitative organic analysis
C228* Scientific principles exemplified

Earth Sciences

B239* Clay minerals
BC216* Earth science field studies
A236 The earth's core

Mathematics

C229 Game theory
B240* A geometric study of the real number system
C230 Introduction to logic
C231* Introduction to number theory
B241* Introduction to stability theory
C232 Lattices, logic and the algebra of switches
BC217* Preparation for and attendance at mathematical seminars
A237 Theory of Markov processes
BC218* Topics in applied mathematics

Physics and Astronomy

B242* Celestial navigation
B243 Introduction to holography
B244 Investigation of a pulsed ruby laser
C233* Light and color
B245 Linear and non-linear processes using lasers: introduction to some uses of coherence properties of laser light in modern technology
A238 Microscopic concepts from a macroscopic viewpoint
C234* Nuclear activation as a nondestructive method of analysis
C235* Observational astronomy
C236 Physics of toys
C237* Principles and applications of magnetism
A239* Special relativity
A240 Vacuum evaporation and thin film techniques

HUMANITIES

Art

B246* Drawing from the nude
C238* Looking at prints
AB212 Modern dance: explorations in movement

Drama

C239* A dramatic production: the Tudor interlude
A241* Historical figures and their portrayals compared in drama

History

C240* Crisis
B247* Duty and dissent: the Mexican War
B248 Isolationism between the wars
A242* Technology and the community: Old Sturbridge Village - a case study in social history
A205*,B205*,C205* WPI archives and historical equipment

Literature

C241* The English novelette and the tradition of the mystery tale
A243* Fiction into films
B249* Introduction to playwriting
A244* Tolkien
A245* Wilderness and the American mind: an ecological view of American literature

Music

A246 Choral singing
B250 Electronic music
A247 Ensemble recorder playing of Baroque and Renaissance music
A251 Melodic structure of Indian classical music
C242 The role of acoustics in the production and sustaining of a musical sound
C243 The St. Louis Quartet
A248 Symphonic workshop

Philosophy and Ethics

A249* The art of dying
C244* The creative imagination in philosophy and poetry
A250* Ethics of the "unethical"
A206*,B206*,C206* Relevance of religion to choice, freedom and responsibility
B252 Science and social responsibility
A251* Sex and society
C245* What is science?

SOCIAL SCIENCES

Economics and Law

B253 Economics of power systems
A252* Engineering economy
B254* Legal topics for engineers
C246* You and your money

Management Techniques

C247* Small business

Sociology and Psychology

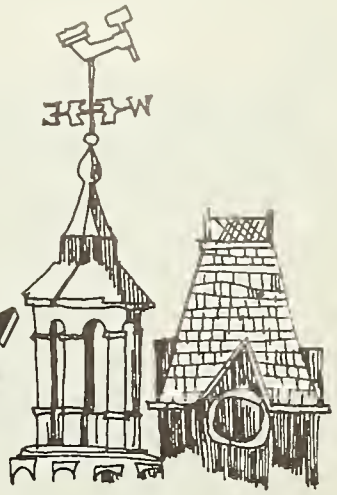
A253 Black consciousness
A254* Child development: the making of a scientist
A255* Creative group problems
B255* Living in a commune
B256 Some psychology for today

ET CETERA

C248 Analyzing football
A256 Astronomic mirror grinding and telescope making
ABC207* Auto mechanics
B257 Bachelor cooking: survival to gourmet
B258 Basketball in depth
A257 Building and maintaining a home: carpentry, plumbing and wiring
B259 Career development
C249* Careers in teaching
B260 Construction of harpsichords and clavichords
C250* Creative color photography
C251 Glass blowing and vacuum techniques
ABC208 Preparation of TV tapes showing lab technique
C252 Rifle marksmanship
B261* Scientific and technical aspects of the photographic process
A258 Seminar on current campus research projects
AB213 Senior life saving
A209,B209,C209 Skiing for beginners
C253 Technical material in written form: searching, organizing & preparing
B262* Urban simulation gaming operation and evaluation
C254 Winter mountaineering expedition
B263 Winter mountaineering workshop
A210*,B210*,C210* Worcester Science Center projects

*Available for credit

CAMPUS NOTES



WPI GLEE CLUB TOUR OF ENGLAND

On March 30, 1971, members of the Worcester Polytechnic Institute Glee Club and the WPI Brass Choir left Worcester for a 12-day concert tour of England. At a short ceremony at City Hall, the key to the city of Worcester and letters of greeting from heads of government in Worcester and Shrewsbury were given to the groups for presentation to officials of their sister cities in England. The group then left by bus for Boston's Logan Airport and flew to London. Under the direction of Prof. Louis J. Curran, WPI musical director, concerts were given in Oxford, Worcester, London, Cambridge, and Shrewsbury. The group returned on April 12 in time to resume classes after the spring vacation.

The trip was funded through the college's annual budget allotted to musical organizations, by a member-sponsored raffle, and by the use of individuals' personal funds. Working closely in planning the tour and aiding Prof. Curran were John Minasian, '72, Glee Club president; Robert Byrne, '71, tour manager; David Moonaw, '73, treasurer; and Dr. Thomas Edwards of the chemistry dept., who sang in the Glee Club bass section and helped in preparing some of the singers.

The timing of the tour during the Christian Holy Week enabled the group to provide music for week-day Anglican masses in Oxford and Shrewsbury, a Palm Sunday mass at Worcester Cathedral, and Catholic and Anglican masses on Easter Sunday in Cambridge. The "Missa Mater Patris" by Josquin des Prés, a 15th century composition in Latin was meticulously prepared for these occasions. Its performance was a great success in Worcester, where the local newspaper lauded the American collegians. The recitals and concerts also included other sacred works as well as secular pieces from around the world.

The highlight of the tour was the Palm Sunday mass followed by an afternoon recital at Worcester Cathedral, an awesome structure that was begun in the eleventh century. The day included a prelude to the mass, starting a sponsored fund-raising walk for the church renovation fund, played by the WPI Brass Choir atop the high bell tower of the cathedral. A combination of wind, ringing bells, and jittery nerves made the event quite exciting for the brassmen. Among those in attendance was England's Minister of the Environment, who was on hand to start the walk.

The singers and players had some time between concerts and traveling to make private tours of their own. Being based in hotels on the outskirts of London, in Blackheath, was an excellent opportunity for many to take day trips into the city. London, like most large cities, cannot be seen in just a few days, and it was difficult to budget the free time available. Others ventured to distant points of interest, via car and train, such as Stonehenge, Canterbury, Dover, and north to Scotland. Some were able to visit with relatives. Fred Kolack, a sophomore member of the Glee Club, traveled all the way to Germany for a family reunion.

The caliber of music at WPI has certainly changed in recent years. The tour was the climax of a very successful year in which the Glee Club and Brass Choir gave several other fine concerts. Much credit can be given to an imaginative and capable director, Prof. Louis Curran. Both of the groups are now attracting some very fine talent, and hope to make more tours of this magnitude in future years. With the new direction of education at WPI, the aims of the musical organizations and the college should complement each other well in the years to come. Ask any member of this year's tour how much he learned about other people and cultures as a result of this trip. Let's all join in giving our support and wishing them the best of luck in the future.

Robert M. Byrne, '71

VARSITY REVIEW

SATISFACTION

Director of Athletics Robert Pritchard stated that during 1970-71, WPI's athletic teams enjoyed their greatest year in modern athletics. Over all sports, 64% of contests were won.

SOCCER

Coach Alan King's men will be defending their divisional college championship, which they took last year with a 9-1-1 record.

King is hopeful of repeating the triumph, but he notes that he will have to reorganize his defense due to the graduation in June of All-American Lionel St. Victor and All-New-England Tim Rooney. Sophomores Steve Williams and Bucky Kashiwa are expected to carry the load.

FOOTBALL

With 18 lettermen returning, Coach Mel Massucco faces the season with experience in most positions. The Engineers' usual problem, lack of depth, is still around, but for the first time this year Freshmen are eligible for varsity football, and this should help out considerably.

Graduation took its toll, and offensive captain Mike Santora, fullback Scott Dineen, guards Trent Germano and Leo Gillis, and center Jim Fay will all have to be replaced. Last year's offensive backfield, sparked by quarterback Steve Joseph and halfbacks Charlie Deschenes and Wayne Pitts will be returning. Coach Massucco is hopeful that Murray Glazier, who showed a great deal of promise last year, will fill in at fullback, but he will have competition from sophomores Gene DeJacome and Gary Velozo.

Last year's offensive line had sophomores Don Moquin, Bruce Beverly, and Tom Cawley, who will be carrying the load this season. Jimmy Buell, who missed last year because of a shoulder injury, will be back at end; he is an outstanding pass receiver. Junior Bill Cormier will be center. Other returning offensive line starters are end Tom Staehr and co-captain Vin Colonero.

The defensive team needs a complete overhaul, according to Coach Massucco. The loss of Frank Steiner and John Plonsky leaves only one experienced linebacker returning: co-captain Jeff Petry. The secondary will miss the services of Jarl Linden and outstanding safety man Don St. Marie (who will be WPI Director of Sports Information this year). Defensive backs Tom Beckman and Kevin Crossen are returning, and heavy duty will be expected from returning ends Larry Prickett and Mark Dupuis, tackles John Cuth and Larry Lavalle, and middle guard Charlie Kavanaugh. Here too, Massucco expects to get strong support from freshmen and sophomores this year.

The kicking game should be fairly solid, with Charlie Deschenes doing the punting and Mark Dupuis the placekicking.

* * *

JV football has a new coach, Dick Heikkinen, who will also be working with the varsity linemen. After the football season ends, Heikkinen will move over to be head wrestling coach, replacing Lenny Pollizotto.

CROSS-COUNTRY

Coach Frank Fannella is hopeful of repeating his winning record of last season. He has eight members of last year's team returning, as well as a number of promising freshmen. The team will be lead by co-captains Mike Malone and Mark Hoyt. Andy Murch, last year's outstanding runner will also be back. Sophomores Scott LePage, Stan Purington, and Joe Gaffen are expected to strengthen the team.

Reunion Roundup

CLASS OF 1906

James E. Smith '06 entertained Franklin Green, '06, Portland, Oregon, Leroy N. Reeve, '06, Melborne Beach, Florida and the writer, at dinner at the Holiday Inn, Friday evening, June 4th. The evening chats proved very interesting and entertaining. We were particularly pleased that President and Mrs. Hazzard were with us for a nice long visit which proved must enjoyable.

Late in the afternoon, Jimmy and I visited Charles L. Tucker, '06, now at the Wayside Nursing Home on Grove Street. Neither he nor Jerome W. Howe, '09 are bed patients, but sit up every day. It was a visit that all four of us will remember for a long time.

Saturday morning, we met at Tech and while Green, Reeve and I attended the Luncheon, Jimmy grasped the opportunity to drive with his son Morrison, '37 to his boyhood home in Rochester, New Hampshire after the class picture was taken.

Illness of the lady-folk prevented Mark Eldridge and Lance Staughton from being with us at this reunion; they were present in 1966.

Roy S. Lanphear, '06

CLASS OF 1912

For the eighth year in succession, 1912 members met for dinner at the Marlboro Country Club, Friday, June 4, 1971. Those present were Joseph and Helen Granger, Henry and Madeline Rickett, Edward Tucker, Harrison Brown, and we were pleased to include Mrs. Herbert F. Taylor and Mrs. Harold L. Nickerson, widows of two of our formerly most active members.

After the dinner we drove to the nearby home of our president, Joe Granger, where we disposed of business matters in about an hour.

On Saturday morning we were joined by Eugene and Gertrude Powers making seven at the Alumni Luncheon.

There is about $2600 interest available in the Herbert Foster Taylor Student Aid Fund; the principal remains unchanged.

There were three deaths during the year: Frank H. Plaisted and Leon H. Treadwell, both in August, 1970, and Charles L. Nevens, just four weeks before our reunion. James P. Hogan died in 1968; the confusion caused by a report by the town clerk that he was still alive resulted from his reference to the son, James B. Hogan. Also reported was the death of John T. Quinn in 1969 but no details were received. With these five gone, our membership is now 29, 13 of whom are out of New England.

CLASS OF 1911

The survivors of the class of 1911, (about 35%) had their annual reunion on Friday evening, June 4 at the Holiday Inn in Worcester. Five members, their wives and two guests were present: Mr. and Mrs. Dave Carpenter, Mr. and Mrs. Howard Chace, Mr. and Mrs. William Donath, Mr. and Mrs. Hugh Reid, Mr. and Mrs. Clarence Taft and two guests, Mrs. Pat Hanaver and her sister.

A social hour and dinner were enjoyed and greetings from several members who could not attend were read.

All agreed to meet at the reunion on the Tech Campus Saturday if possible.

Howard P. Chace
President, Class of 1911

It was gratifying to make contact this year with 80% of our members. Of the six who failed to answer our letter, two had recently sent in long letters. While distance and weakness are common reasons for not attending reunions, a few were detained only by conflicting appointments such as graduation of grandchildren.

Eric Benedict is still in good health but his "line voltage seems a bit lower." He extends an invitation to any who may visit the Cape... Bertram Cleveland still goes to business and plays golf... George Clifford is beginning to get arthritis and now realizes how his wife has suffered for some years... J. Francis Granger, our President, is in good health, is Chairman of Marlborough Hospital Planning Committee, and Secretary of Massachusetts Highway Association... Guy Hawkins is doing some planting on eight acres of Arizona desert land. Last summer he sent in an account of his experience with Road Runner Cuckoo birds with a picture of one eating out of his hand. This was occasioned by a note in the Journal (Spring 1970) from George Gilchrest. We forwarded it to George with the hope that the two might get together over the 100 miles separating them... Howard King fully intended to attend both Friday and Saturday but a last minute problem delayed his arrival in Worcester until late Saturday so he continued on to Scarborough, Maine, where he spends his summers. He is nearly blind but cheerful... Alfred Kinney is "studying the art of doing nothing, alone, after a heart attack some time ago". His new address is Skyland Motor Inn which he hopes is temporary.

Frank McGowan is now fully retired. A conflict of dates was all that kept him from the reunion... Fred Munson is at his office every working day but retires at noon to his deep woods home in Leicester with a pond in the back yard where he has only the dog to talk to... Carlton Norton plays golf and bridge with the "Sons in Retirement", to which he belongs. The exercise keeps him physically fit. His oldest son, Carl Jr., who was with the FBI, died last April... Eugene Powers is as lively and youthful as ever. With the mischievous sparkle in his eye it is hard to believe he has finally turned 80; he was the last of us to reach that... Henry Rickett, with Madeline, holds the record for attending all nine reunions since our 50th. He is still interested in civic service and church... James Shea still keeps up his business activities but has some difficulty in walking... Clinton Smith still serves as Transportation Consultant but no longer drives a car. Mrs. Smith is suffering from a 1965 accident... Harland Stuart is the real busy bee. He is fighting the battle of Gettysburg to keep a 300 foot tower from being built on the battlefield. There is plenty of activity in this historic town. As chairman of a committee, he is identifying and marking civil war houses — over 220 so far. The Rotary and the YWCA know to whom they can go when they want action; and the First Baptist Church has made him a deacon... Ernest (Nibs) Taylor continues to be the most prolific letter writer. Struggles with the typewriter, the weather, shopping, card parties, grandchildren, plants and flowers — he covers many subjects, all sprinkled with humor. He has decided not to furnish the ground squirrels with more tulip bulb salad. He sent a picture of the electric hoe mentioned last year in the Journal. It can also mow in tight corners and polish floors... Edward Tucker doesn't drive but manages to get around depending upon buses and his daughter... Holman Waring, as honorary secretary of the Sanitary Commission, keeps up with current practice by reading. He also lectures regularly at the University and to other groups... Other reports were received from Earl Gleason, August Reinhard, Roger Towne, and Guy Whitney.

Finally, your Secretary bores everyone by boasting of being secretary-treasurer of four organizations: 1912 Class, Tech Old-Timers, Improvement Society, and Men's Forum. Life never gets dull when you have months' undone jobs ahead.

Harrison G. Brown, Secretary

CLASS OF 1916

The 55th Reunion of the Class of 1916 was held in the Holiday Inn in Worcester on Friday evening June 5, 1971 with nine classmates and seven wives in attendance.

Previously all met at Daniels Hall Lounge and were conducted on a tour of several new buildings by one of next year's clean-cut seniors. The campus is beautiful and the changes in 55 years are fantastic.

Stoddard Residence Center on Institute Road was visited first. It was dedicated last Fall and consists of three separate buildings, in one of which the women students live on the third or top floor and men students live on the lower floors. The three buildings are heated electrically and each contains a central lounge area which opens onto an outdoor patio. One of the buildings has a seven bed infirmary.

Harrington Auditorium, completed in 1968, was next. It seats over 3000 people and adjoins the Alumni Gymnasium which was completed in 1916. It is my recollection that the latter was used for the first time for our 1916 Commencement Exercises, since which time the student body has tripled.

The George C. Gordon Library was visited last. It is very imposing from the outside and very beautiful and businesslike on the inside. Air conditioning, carpeting, and upholstered furniture all add to its attractiveness. Do you remember that at our 50th Reunion in 1966 our class contributed more than $23,000 for new books for this Library?

From the Library we drove to Holiday Inn where friendships were renewed and good fellowship prevailed, all helped by an excellent accordion player.

Those present with wives were Leslie Chaffee, Wellen Colburn, Roland Horne, Robert E. Lamb, Arthur Nutt, Roy Storms and Horace Trull. Carl Burgess was alone as his wife passed away in 1966. Bud Royal also was alone as his wife attended an important family wedding in or near Washington, D.C. Don Maynard missed the dinner but did attend the alumni Luncheon on Saturday.

The Chaffees from Tacoma, Washington came the greatest distance but Mrs. Lamb, before returning to their home in Deerfield Beach, Florida will have travelled further. From Worcester she and Bob were to drive to Detroit, Michigan. From there she was to start on a trip around the world with a

group sponsored by the General Federation of Women's Clubs. Bob was to drive alone to Florida.

After an excellent dinner Bud Royal, our Class President, conducted a brief business meeting. The first item was a moment of silence for the 13 classmates who have passed away since our 50th Reunion.

Next, Bud attempted to resign as President but was unanimously voted down. Arthur Nutt was continued as Vice President and C. LeRoy Storms as Secretary-Treasurer. Incidentally we have a little over $100.00 in our account.

Bud then asked each classmate to outline briefly his activities. All had been unusually busy, considering their youth!

Our attendance was smaller than anticipated last Fall for several reasons:

Arthur Blair was hit by an automobile while crossing a street in his home town of Haddonfield, N.J. on March 15 and seriously hurt. Mrs. Blair writes that it will be six months before Arthur can walk again.

Wally Wallsten had surgery in March while at his winter home in Pinellas Park, Florida and was unable to attend.

Aurelio Zambarano hurt his back in May and could not come up from Florida.

Ralph Farnum died suddenly on April 13, 1971 while in St. Petersburg, Florida.

Joe Murphy did not come because his wife passed away in her sleep on May 18, 1971 in Armonk, New York.

Si Collier, Phil Cooke and Lawrence Jones all had conflicts on that date.

Notes from several classmates were read:

Frank Gifford has been in ill health for the past 5 years. He requested that we sing "loud and clear" just for him, an old time favorite "On the Old Fall River Line". We were happy to do so with the assistance of our accordion player.

Everett Bragdon will soon move from West Baldwin, Maine to Lynchburg, Va.

Arthur K. Ingraham of Oakland, California sent a clipping about his second retirement this past March. He was in the Engineering Dept. of the Pacific Gas and Electric Co. in San Francisco from 1923 until he retired in 1959. During that period he held all the various offices in the American Society of Mechanical Engineers, San Francisco Section and also served eight years with the Army Engineers as a Colonel.

In 1959 he started another career in the Public Works Department at the U.S. Navy's Treasure Island Station in San Francisco Bay. His second retirement was from this position in March 1971.

James C. (Jimmy) Walker, a member of Tech's Board of Trustees, regretted he could not be with us as he would be in France.

After hearing about our classmates, the evening was concluded by Bob Lamb showing some movies of our 40th Reunion in 1956 at Toy Town Tavern in Winchendon, Mass. and of an extended trip through Switzerland he and his wife took a few years ago. All were most enjoyable and everyone agreed that Bob is an excellent photographer.

One additional personal note. After the Alumni Luncheon Mrs. Storms and I walked to the Higgins home which has just been donated to Tech. It is on Salisbury Street, was built in 1924, and is modelled after an English country home. It is beautiful and most intriguing even without furniture. We were fortunate in joining a small group and having a personally conducted tour of the house by Mr. Milton P. Higgins, newly elected Chairman of the Board of Trustees of WPI. Approximately 5 acres, I believe, of well landscaped grounds will be added to Tech's campus.

C. LeRoy Storms
Secretary-Treasurer

CLASS OF 1921

'21 "Had a Ball" on their 50th reunion weekend at the former Toy Town Tavern (now the Winchendon School) and at Worcester. The lucky members attending were: Harold and Meta Black; Carleton and Hellen Bolles; Spike and Harriet Brown; Myron and Ruth Chace; Bob and Eva Chapman; Irving M. Desper; Bob Eldred; Bud and Edra Fisher; Carroll and Dorothy Huntington; Dr. Cy and Mrs. Israel; Johnny and Hazel Johnson; Jerry and Ruth Martin; Stan McCaslin; Lyle and Betty Morse; Dick and Janet Penfield; Earle Pickering; Ed and Mrs. Rose; Paul Sessions; B. C. and Phylis Shaw; I. R. Smith; Foster and Elizabeth Sturtevant; Bud Thayer; Linc and Anne Thompson; Harold and Margaret Whitmore; Alex and Victoria Wilson; Paul and Bertie Woodbury.

Half of the 26 members listed above and 19 wives arrived Thursday afternoon in time for cocktails on the porch. After a delicious dinner, we spent the evening reminiscing. With Spike and Jerry as bartenders and Bud Thayer as entertainer, the time passed merrily.

The rest of the gang arrived Friday. Bud Thayer escorted the "girls" on an antique shop trip while the "boys" again recalled many of the events of the '17 to '21 years. All got together at 5:00 p.m. for cocktails.

In 1921, I. R. Smith was elected our permanent president, but in as much as he attends reunions only every 50 years, we fired him forty years ago, and have elected officers every five years. The present officers are as follows: President, "Johnny" Johnson; Vice-president, "Linc" Thompson; Secretary, "Carl" Bolles; Treasurer, "Bob" Chapman; Reunion Committee: officers plus "Spike" Brown, "Cherub" Chace, "Jerry" Martin and "Honie" Huntington.

After dinner "Johnny" called the meeting to order. A moment of silence was observed in memory of the '21 class members no longer with us, and the names of the eleven deceased since our last reunion were read by "Carl."

Excerpts from letters from class members who could not attend the reunion were read by "Johnny," as follows:

Jack Williams, Dept. of Chemistry, University of Wisconsin — Jack has been teaching Physical Chemistry at the University of Wisconsin for many years, and in his research activities has written a large number of papers and reports. P. K. Davis, Carmel, California — Phil had planned to be with us, but when Tech changed the date for reunion to June 3, it made it impossible for him to attend. Dick Pereira, Brazil — His government says "no" to his spending money in the U.S.A. He wished, however, to be remembered to all. George Condit, Mesa, Arizona — He retired to Arizona five years ago, and has kept busy with National Service Clubs, Boy Scouts, Irrigation District, etc., etc. Cal Callahan, Newburgh, N.Y. — He doesn't admit it, but the old politician is still at it. He is busy as ever directing functions of the Land Office. Fred Pickwick, Grand Junction, Colorado — Fred has retired from the Atomic Energy Commission, and has decided to stay in the far

1926

West. Bill Schuerman, Monmouth, Oregon — Bill is still consulting in the Willamette Valley, but he didn't say what about. Tessie Burleigh, Tavares, Florida — Tessie phoned from Tavares to wish us all a happy reunion and to express his regrets.

Jerry Martin reported on the Fiftieth Anniversary Gift and asked Chuck Ross to give us the good news. We are at present up to the $40,000 mark, with 34 out of 63 members listed. Jerry suggested and we voted not to specify the use of our gift, but rather to have it applied to the general fund.

Johnny produced a leather-covered 1921 commencement program, which brought back fond memories and produced many wise-cracks from the audience. He then called for each member to tell, in a few short sentences, what they have been doing (omitting any references to children or grandchildren). The reports were identical — "Retired."

On Saturday we drove to WPI to join the Fifty-Year Associates and have our class picture taken. At the alumni luncheon we received our individual Fifty-Year Certificates from President Hazzard, and won the class attendance cup.

We "had a ball"!

Carleton F. Bolles, Secretary

CLASS OF 1926

This was one of the finest turnouts in years. Forty-three class members and thirty-seven wives were on hand for Friday night's festivities at the Yankee Drummer Inn. Cocktail hour began at 5:00 p.m. with dinner at 7:00 p.m. so there was plenty of time to chat with everyone before the serious business of eating. An excellent roast beef dinner was served. After dinner President Hap Kallander reviewed some of the past and spoke of those no longer with us. Officers for the next five years were elected being: Emerson A. Wiggin, Pres., Richard P. Houlihan, Vice Pres.; C. Sture Carlson, Sec.-Treas.; Milton E. Bergland, Chairman of the 50 year gift fund; and Lawrence S. Peterson, Chairman of the 50th reunion. Hap then introduced Prof. van Alstyne who enlightened us on the new methods of education on the Hill. This was most interesting and well received. Two more members arrived for Saturday's activities but we lost some from the night before so were not able to win the attendance prize. This will not happen at the 50th.

Emerson A. Wiggin
Reunion Chairman

1931

CLASS OF 1936

A total of forty-five members, and wives, including Dr. and Mrs. Albert Schwieger really "reunioned" at the Coach and Six Restaurant on June 4, to celebrate and reminisce the four (or more) years at WPI and the 35 years since then.

Committees of wives were challenged to make decisions about members of the class concerning their present attributes. After much deliberation these committees decided that Brewster Howard was the "MOST TYPICAL GRADUATE," Roger Bruce, the "BEST PRESERVED," and Art Tripp, the "MOST MOD DRESSER." They also concluded that Jack Brand's "Waistline Had Changed The Least" since 1936 (and this you can believe) and Len Johnson had the "Friendliest Smile" (you know, you still like him immediately). Appropriate WPI prizes were awarded for each of these achievements.

Ed Wilcox, Bob Fowler and Carl Benson were the recipients of WPI attendance prizes.

The Committee does believe that our wives helped to support the Tech Bookstore by these purchases!

It was most interesting to hear what our members had been doing since our last reunion and, in some cases, for the last 35 years. Len Johnson has two sets of twins (does his friendly smile contribute?) and Bill Maine six grandchildren; Jack Sacks and Martin Gowdy have retired (lucky fellows!) and work at their pleasure.

This was Al Ekberg's first return in 35 years and he travelled from Albuquerque, New Mexico to do so, the longest distance

of any present, for which he received an award. He says it is wonderful country, and please look him up if you're in the area.

Al Schwieger gave an interesting and informative talk on the new WPI curriculum. It certainly is challenging and we wonder how many of us would be able to graduate in the approximately three years minimum predicted. How about lectures on video-tape?

Greetings to those present were given for our Class Officers by Jack Brand, Vice President. Jack hasn't changed much either!

Those not able to attend (for reasons of college graduations, being overseas, or getting married) who sent messages to the Reunion were Don Edmunds, Hal Burr, George Chase, Fred Yeo, Ted Wyman, Ben Smith, Hal Pomeroy, Nelson Marshall, Clint Leech, Joe Hastings, Ed Guild and Jim Ethier.

It was a grand reunion — now on to the 40th! Those at the reunion included: Mr. and Mrs. Edward Armstrong; Mr. and Mrs. Carl Benson; Mr. and Mrs. Leo Benoit; Mr. and Mrs. John Brand; Mr. and Mrs. Roger Bruce; Mr. and Mrs. Earl Curtis; Mr. and Mrs. Walter Dahlstrom; Mr. and Mrs. Alfred Ekberg; Mr. and Mrs. Robert Fowler, Jr.; Mr. and Mrs. Scot Goodwin; Mr. and Mrs. Alexander Gordon; Mr. and Mrs. Martin Gowdey; Mr. and Mrs. Brewster Howard; Mr. and Mrs. Leonard Johnson; Mr. and Mrs. William Maine; Mr. and Mrs. Foster McRell, Jr.; Mr. and Mrs. Reginald Morrill; Mr. and Mrs. Jacob Sacks; Dr. and Mrs. Albert Schwieger; Mr. and Mrs. George Sherwin; Mr. and Mrs. Headen Thompson; Mr. and Mrs. Abbott Wilcox.

1936

Walter Dahlstrom
Yngve Nordstrom
George Sherwin
(and our Wives)
Reunion Committee

1941

CLASS OF 1941

As usual, this "great" class had loads of fun. Our 30th?! — nobody looked their age!

Forty-one classmates and wives gathered on Friday, June 4th at the Driftwood Motor Inn and Lodge in Shrewsbury for a splendid and refreshing renewal — lasting till late. Tasty roast beef and lobster were on the menu.

Carl Koontz, Professor and Head of Civil Engineering and wife Sue joined us for this informal evening of fun and merriment — socializing, singing, talking, dining and dancing to the swinging "41 era" music of George Adrian and his orchestra. And — how about that sing-a-long! Packing all our cares and woes — "Bye Bye Blackbird", — the bells were ringing — "For Me and My Gal" — who is — "A Million Dollar Baby" — and — "As Time Goes By" — "I Can't Give You Anything But Love" — but — "Let Me Call You Sweetheart" — and "Ma, He's (still) Making Eyes At Me" — then — "Ballin The Jack" — and "The Red Red Robin"?! — and more.

We really missed all those who couldn't come, for ever so many important reasons, at this busy time of the year. Everyone participated joyfully telling of contacts maintained with other members and their

wives — indicating where and how they might be found and what they were doing. Announcements were numerous, for our friends are world-wide doing great things.

Partiality is not intended by singling out a few, but we think it's important to mention that Bud and Nita Roberton traveled from Spokane, Washington; Stan Majka and wife from Orindo, California; and the entire Ed Ryan family journeyed from Washington. How nice to see Ken and Christine Dresser who haven't been able to make it for a long, long time because of their travels in the service. But our warm and ever-loyal friends the Georges, Muirs, Greenwoods, Harans, Hoebels, Koleshs, Nystroms, Pecks, Richardsons, Whatakers, Whites, McGuiness', Wolkonowitzs, McElroys, Wilsons and the McKeowns were there too.

Given room, we could say something extra nice about everyone, thank them for coming and for making the party such a joyful one. I heard it said that "the women still looked much younger than the men" in spite of their chores and responsibilities keeping us in line.

Charlie Hoebel and wife "Hutch" walked off with the golf prizes. They sure enjoyed the game at Juniper Hill. Vic Kolesh, golfing and fund-collecting-specialist and Doug McKeown, "another golfer," can attest to that.

All of the women "walked off" with lovely table decorations. Rightly so, since the cute little vases bearing flowers were mementos for the women. They were pretty. Fellow classmates received the Story of Worcester Tech 1865-1965, "Two Towers" — a pleasant reminder of days past.

And, there were door prizes! Many won gifts that seemed to please.

It was evident that Ros McKeown had a special hand in most things — her husband being most grateful. Even Vic Kolesh was astounded that "all counts" balanced off so well.

With our '41 banner, ribbons and smiles, picture-taking time on Saturday was easy. So — have a look! Unfortunately, more conflicts in date prevented some of those attending Friday to make Saturday's picture.

The weekend was perfect! We'll do it again! Plan now for the next.

Doug McKeown

CLASS OF 1946

The class of 1946 held its 25th reunion on Friday, June 4 during Reunion Weekend on campus. Some 80 members of the class and their wives had the privilege of holding the first social event in the old Higgins mansion located behind the Olin laboratories and the old gymnasium. We had perfect weather and the cocktail hour was held in the garden, followed by dinner and dancing in a beautiful setting. It was certainly great to renew acquaintances and to relive the days of the past. Everybody was in fine spirit and needless to say, a great time was had by all. So much so, that when it came to one a.m. and time to discontinue activities at the Higgins estate, the gang talked the band into moving to the front steps of the Daniels dormitory and the party continued with music and gaiety for a couple of more hours. The class of 1946 is undoubtedly in the record books as having outstanding spirit and for holding the first outdoor dance at the Daniels dormitory, which is where most of the out-of-towners stayed overnight.

Charlie McNulty, whom you will remember as a Navy Chief Petty Officer and athletic coach, was our banquet speaker. He gave a very amusing dissertation on days gone by and progress at Tech since our departure. We learned more about what really went on in the early 1940's than we ever could have imagined while we were there. Following his outstanding presentation, the class unanimously voted Charlie McNulty as an honorary member of the class of 1946. President Hazzard and his wife made a brief appearance at the reunion and met most of the classmates.

Enclosed is another biographical form for those who didn't complete one originally. We have decided that if those of you who have not told us about your career will get on the ball and do so on the form, we will issue a collection of supplemental sheets a few weeks from now which classmates can incorporate in their booklet. For those of you who did not receive the printed booklet, you may have one by sending $3 to the Alumni Office. Those of you who could not make the reunion and forgot about this summary, please do it right away and mail it to Steve Hebert at the Alumni Office. Steve Hebert has just been appointed our new Alumni Executive Secretary replacing Warren Zepp who has been promoted to a new position as Special Assistant to the Vice President of University Relations. This change occurred at the reunion weekend.

At the reunion, a special committee decided, and it was approved, that the use of our 25 year class gift would be for the purpose of advancing WPI's program on their multi-media approach to education, primarily in the audio-visual area. Upon our arrival, our class gift had totaled $6300; but before the Alumni Luncheon on Saturday, we had been able to increase it to $7200. We know there are many returns which did not reach us in time and we announced the objective of attaining a class gift of $10,000. We would like all those who have not yet submitted, or who would like to increase his gift, to do it immediately. Remember, that we have been allowed to make a 3 year pledge and that this pledge to our class gift at this time would also be considered as your gift to the Alumni Association for this 3 year period. Please send your pledges to Steve Hebert on the forms enclosed.

You will be interested to know that Bill Bergman traveled the longest distance just for the reunion, coming in from Santa Barbara, California. Pat and George Morin of Keene, New Hampshire have the largest family, 8 children. You would never have guessed it as Pat led the activities in all types of dancing including some fancy group Greek numbers. Joe Johnson had a son graduating from WPI on June 6 and John Gagliardo has a son finishing his Sophomore year. Attendees received a Worcester Tech mug or large beer glass as a memento of the occasion. The class picture was taken in the Higgins estate garden. Classmate Charlie Richardson brought back old memories as he joined the Orchestra with his trumpet à la days and memories of the Boyntonians. He puffed away until 3 a.m.

You should all know that your representatives and reunion attendees have agreed with the Alumni office that for reunion and administrative purposes the suffixes A, B, C and D will be discontinued and we will be treated as one class of 1946. We have already demonstrated our spirit in unison and those of you who could not make it missed a wonderful weekend. Our next reunion will be in 5 years, when we join for our 30th. Let's go after the trophy for the highest percent attendance and for another great time. You may be interested in who made it this time so a list of attendees is also enclosed. See you in '76.

Carl Simon

CLASS OF 1951

The Class of 1951 exchanged experiences with each other Saturday morning and at lunch and had our group picture taken prior to a very enjoyable evening spent at the Driftwood Motor Lodge.

This we all agreed was our best get-together to date and vowed that the next, 25th, would be even better, so be prepared and start making plans with your classmates that you see and haven't seen for twenty years to help be with us for the big one in '76.

A very enjoyable social hour prior to a roast beef dinner followed by a song fest and Dixie Land jazz band made up our evening activities. Our guests, Bob and Jean Pritchard, showed us their dancing style and led us in singing our favorite songs. The following members and wives who attended, hope to see all of the Class of '51 in the year 1976. Mr. and Mrs. Mark Baker, Mr. Don Corey, Mr. Rick Ferrari, Mr. and Mrs. Ed Johnson, Mr. and Mrs. Sid Kessler, Mr. and Mrs. Hugh Lovell, Mr. and Mrs. Stan Miller, Mr. and Mrs. Duncan Monroe, Mr. and Mrs. Jim Rich, Mr. and Mrs. Larry Scinto, Mr. and Mrs. Vartkes Sohigian, Mr. and Mrs.

1951

Henry Taylor, Mr. and Mrs. Bob Wolff, Mr. and Mrs. Jack Writer, Mr. and Mrs. Ed Nahikian, Mr. and Mrs. Roy Olson, Mr. and Mrs. Neal Peterson, Mr. and Mrs. Merrill Spiller, Mr. and Mrs. Charles Pierce, Mr. and Mrs. John George, Mr. and Mrs. Dick Erickson and Mr. and Mrs. Louis DelSignore.

CLASS OF 1961

On Saturday, June 5, the Class of '61 gathered to renew old friendships after 10 years away from the "Tute." Daytime activities included the Alumni Association meeting and a tour of the many new buildings and facilities on campus, including the grounds of the recently acquired Higgins Estate.

The evening was highlighted by an excellent dinner, dancing, and socializing at Pleasant Valley Country Club in Sutton. Twenty-three couples attended, coming from New England, New York, and New Jersey.

A few class members showed signs of thinning hair and expanding waistlines. However, many had much more hair, including moustaches and beards, than the crew-cut and "Princeton" styles of our college days. There were still a few bachelors, with dates, but most men were married with as many as four children. The wives and dates were without exception chic and attractive.

There was a good cross-section of business, industry, and education represented. Jobs range from self-employed and small consulting firms to "Ma Bell" and I.B.M.

Those attending include Dick Adler, Bill Calder, Joe Carpentiere, Charlie Cook, Ron Delaripa, Roger Faulk, Bob Fitch, Jack Gabarro, Lee Gazoorian, Walt Haller, Brad Hosmer, Stu Kazin, Hank Kosiba, Steve Lerman, Charlie Mello, Jerry Mullaney, Norm Noel, Yesugey Oktay, Dick O'Shea, Ken Parker, Dave Raab, Moe Rees, Al Sherman, and Rich Vogel.

Morgan Rees, Chairman

CLASS OF 1966

The class of 1966 held its fifth-year reunion on Saturday evening, June 5. The evening included a social hour on the grounds of the Higgins Estate, followed by a dinner-dance at Putnam & Thurston's. Although the turnout was small, everyone had a good time. Those present were: Tom Benoit, John Bowen, Steve Hebert, Pete Kudless, Skip Kunz, John Lautherback, Larry Penoncello, Don Ruef, Mike Salvini, Roman Sywak, Ron Tata, and Len Weckel.

Larry Penoncello, President.

1961

1966

ALUMNI OFFICE PROMOTIONS

Stephen J. Hebert, '66, Becomes Secretary-Treasurer

Stephen J. Hebert, '66, has been appointed to succeed Warren B. Zepp as secretary-treasurer of the Alumni Association. Hebert had been assistant alumni secretary for the previous two years. In making the announcement, President Hazzard expressed confidence that Hebert would carry on in continuing to help in increasing alumni participation in WPI activities.

Hebert, a 1966 civil engineering graduate of the college, had taught and coached at the Springfield, Vt., High School prior to working for the association. As assistant alumni secretary, his primary responsibility had been in chapter meeting programs, the alumni fund and *The Journal.* With the exception of *The Journal,* which is now edited by the college director of publications, Russell Kay, Hebert will be continuing in his past responsibilities plus the general administrative duties of the association.

A rather tall individual, Steve's quick smile and wide range of interest provide for engaging conversation, and although his putting on the golf course may leave something to be desired, his iron game more than compensates. Steve enjoys traveling, and so alumni who have yet to meet him will undoubtedly have the opportunity in the coming year.

WARREN ZEPP MOVES UP

At a meeting of the Alumni Council, held on June 4, President Hazzard announced that Warren B. Zepp had been appointed special assistant to the vice president for university relations. In his new position, Zepp will continue working with alumni in addition to organizing a second career program and directing a revitalized effort in deferred giving.

"Warren Zepp's service to WPI as secretary-treasurer of the alumni association since 1954 has been of major aid to the college," said President Hazzard. "In his new position I am sure that he will continue to make important contributions to alumni and to WPI."

The Alumni Association honored Warren on Saturday, June 5, at the annual alumni luncheon. He was presented with a plaque and a tape recorder. Robert E. Higgs, '40, retiring president of the association said, "This token can hardly repay you, Warren, for all the things you have done for alumni and alma mater. I do note, however, that you will continue your work at WPI in the coming years and thus I'm sure there will be another occasion in the future."

For Zepp, his new assignment is but another benchmark in a career of service to WPI. Graduating in 1942 with a degree in mechanical engineering, he joined the faculty of the college the following fall. In 1947 he was appointed an assistant professor and in 1952 became acting superintendent of the Washburn Shops. The shops were in their declining years at that time, having suffered decreased gross sales for the previous several years. Under Zepp's direction, however, they enjoyed prosperity, although shortly after he left, the decision was reached to cease their operation.

The Alumni Association appointed him secretary-treasurer in 1954 and for the next 17 years he continued in that position. Under his stewardship, the association's programs expanded at a steady pace. Highlights of his tenure include the establishment of a complete and up-to-date record-keeping system, expansion of the number of alumni chapters and frequency of meetings and the expansion of the Alumni *Journal.* Also during this period the college conducted two capital gift campaigns, raising over $24 million, and the alumni fund experienced a steady growth, climbing from an annual income of $54,000 in 1954 to $212,000 this past year.

Looking back on it all, Zepp can undoubtedly recall many instances of special satisfaction. Being a modest man, however, he declines to single out a specific instance. As he has often said, half to himself: "It's not what is being accomplished, although that's important. It's that alumni of different generations are working together, getting to know each other, and contributing their time and skills to helping WPI become a better college." Helping to make that possible is what Warren Zepp has proved very skillful at these past 17 years.

The 1970-71 Annual Alumni Fund

REPORT

Dear WPI Alumnus,

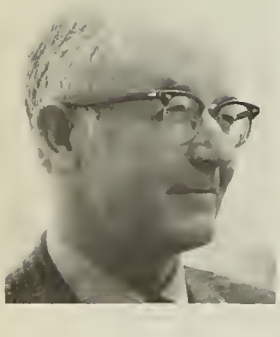
Another record year, with total alumni gifts and pledges of $215,005, plus matching gifts of $21,231.69, totalling $236,236.69. Despite some adverse economical and sociological factors, our record shows a considerable increase in support over last year. My pride, I am certain, is shared by all WPI alumni in this extraordinary accomplishment. This was not the result of a single gift or chapter but rather the result of the collective efforts of over 750 alumni volunteers and over 3000 donors. These were individuals who translated their love and loyalty for WPI into positive action – action that will greatly assist the college in meeting the needs of the day and planning for the future.

It was particularly gratifying to work with our 750 devoted alumni volunteers who made many sacrifices to make the program successful. The Fund Keymen are to be congratulated for an outstanding organizational effort, as are the Captains and Contactmen who did the actual soliciting.

Looking ahead to 1971-72 a goal for the Alumni Fund of $300,000 has been set as the level necessary to meet needs which are very real and ever present. I am confident that the goal can be attained. It will be a difficult assignment and it will require many personal sacrifices. WPI alumni, however, have accepted and met challenges before and I know you will meet this newest challenge to help WPI.

Sincerely,

Irving James Donahue Jr., '44
Alumni Fund Board Chairman, 1970-71



Dear WPI Alumnus,

1970-71 was an extraordinary year by every measure. It was a year of financial crisis for colleges throughout the cour which the media have been busy proclaiming. WPI has been no exception, but we have met a test and have come through v flying colors. The loyalty and the dedication of the members of the WPI community are real grounds for faith in the fut and confidence in all that WPI has done and will be.

This faith has been translated into action on the part of many – in fact, self-sacrifice as well. Our faculty, as you kn accepted a year of wage freeze, a difficult thing to do during an inflationary economy. They did so, I think, with a real se of dedication to WPI and its educational role. Alumni made similar contributions which were translated into an Alumni F exceeding the $200,000 level for the first time in the history of the college. Foundations have also exhibited strong confide in WPI. Major grants by the Carnegie and Sloan Foundations in support of our programs are most significant.

Of great help is a positive admissions picture at WPI just as other engineering colleges seem to be getting negative resu The WPI Plan and the personal help of many of you have given us a higher than usual rate of acceptance and a larger freshn class than anticipated. The resulting tuition revenue is very significant in our financial picture.

The generosity which you have demonstrated and which brought the Fund above the $200,000 level is deeply apprecia by everyone on the Hill. We consider it a vote of confidence in WPI and its leadership role in the future. The Funds will ena us not only to provide the best engineering education available, but to continue to improve WPI's educational program a community. Especially important are the Alumni Scholarships – to WPI and the students receiving them.

In particular, I extend my sincere thanks to Jim Donahue, the entire Alumni Fund Board, and the hundreds of enthusia and devoted alumni volunteers who made this record-breaking fund possible.

George W. Hazzard
President

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Max Bialer '40
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Pasquale Campanella '68
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Allan E. Carlson '57
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Paul M. Castle '66
Leslie J. Chaffee '16
Robert E. Chapman '21
Allan H. Chase '39
Rohert A. Chechile '60
Everett S. Child, Jr. '50
Robert Chin '50
Rasiklal V. Chokshi '70
Joseph N. Christian '42
Carroll B. Church '49
Marcel H. Clavien '63
Richard W. Cloues '38
John W. Cnossen '55
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Loring Coes, Jr. '36
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Hubert M. Cole, Jr. '62
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Arnold M. Cook '29
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Allan J. Costantin '54
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Leo F. Cournoyer '59
Robert C. Crawford '61
Frank A. Crosby, Jr. '40
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Rajnikant P. Dave '63
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Francis Defalco '58
Albert M. Demont '31
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Ronald J. Dill '67
John A. Dillon, Jr. '51
Fidele L. Dipippo '60
John R. Dobie '29
William B. Dodge '42
Frederick E. Drake '55
Ronald W. Dufries '61
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Terrence M. Dupuis '60
Larry Dworkin '58
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Magnus J. Einarson '58
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George E. Engman '50
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Richard E. Epstein '63
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Michael J. Essex, Jr. '52
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Lee P. Farnsworth '43
Francis H. Fay '50
Robert G. Ferguson '48
Albert G. Ferron '57
Theodore L. Fish '31
Warren H. Fitzer '45
Robert W. Fitzgerald '53
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Carroll D. Forristall '26
Kendall F. Forsberg '53
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Seymour L. Friedman '57
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Allen H. Gridley, Jr. '38
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Gerald A. Gutman '64
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Richard G. Hajec '56
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Jerald N. Hamernick '62
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Joseph R. Hastings '36
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Ronald C. Hayden '66
Herbert J. Hayes, Jr. '51
Roswell J. Heald '62
Richard L. Healer '66
Charles M. Healey, Jr. '26
David G. Healey '69
Frederick P. Helm '67
Carl P. Hershfield '48
Lawson T. Hill, Jr. '50
Rohert W. Hoag '59
Ralph Hodgkinson '31
Allen H. Hoffman '63
William H. Holmes '61
Rohert J. Horrigan '55
Holhrook L. Horton '29
Thomas Houston '60
Richard E. Howard '51
Richard B. Hoyt '59
John W. Hughes '39
George L. Humphrey '65
Thomas F. Humphrey '59
Alfred E. Irelan '61
Lionel J. Irvine '58
William A. Jobert '65
David C. Johnson '66
John W. Johnson '61
Stanley F. Johnson '26
William A. Johnson '56
Chandler W. Jones '26
William F. Jordan, Jr. '56
Stepben K. Kaiser '66
Ronald D. Kangas '58
Samuel B. Kaplan '39
Richard A. Kashnow '63
Francis E. Kearney '50
Paul J. Keating '64
Averill S. Keith '43
Alan Kennedy '46B
Francis E. Kennedy, Jr. '63
Owen W. Kennedy, Jr. '45
Donald E. Kirk '59
Earl C. Klaubert '52
Norman G. Klaucke '41
Ronald P. Klay '64
C. Stanley Knight '32
Keith L. Knowlton '66
Chester S. Kolaczyk '52
Paul S. Krantz, Jr. '64
Donald M. Krauss '52
Roger R. Lafontaine '60
Erling Lagerholm '44
Stepben J. Lak, Jr. '67
Roderic C. Lancey '51
Roger W. Lane '51
Spencer K. Lang '40
Michael R. Latina '68
John A. Leach, Jr. '40
Lutber C. Leavitt '34
Joseph D. Leblanc '62
John W. Lebourveau '44
John K. A. Leland '55
John B. Lewis '61
Frank R. Lindberg '41
Charles Lipson '60
Thomas Y. Liu '67
William W. Locke '30
S. Paul London '54
Calvin F. Long '46
George H. Long, Jr. '57
Richard A. Loomis '55
Albert H. Lorentzen '51
Vilho A. Lucander '56
Edward A. Luiz '49
Peter H. Lukesh '66
Robert G. Lunger '53
James S. MacKay '53
Homer E. MacNutt, Jr. '49
Francis W. Maher, Jr. '68
Robert M. Malbon '63
John M. Maljanian '52
Winthrop S. Marston '26
Peter J. Martin '62
James S. Mathews '55
Norman B. Maynard '50
F. Douglas McKeown '41
Peter F. McKittrick '68
Orren B. McKnight, Jr. '53
William R. McLeod, Jr. '58
Robert W. McMaster '32
Raymon F. Meader '20
William E. Meadowcroft '48
Hemant D. Mehta '70
Eustace I. Merrill '27
Richard T. Messinger '40
Richard S. Meyer '60
Ralph V. Miller, Jr. '64
Stanley L. Miller '51
Allen M. Mintz '48
Robert W. Mitchell '42
William P. Mitnik '34
John P. Morrill '53
Stephen P. Mozden, Jr. '63
Gerald A. Mullaney '61
Richard M. Murphy '65
William J. Museler '64
Arthur Nedvin '57
Clifton C. Nickerson '49
Roland L. Nims '35
Donald R. Nitsche '66
John Nizamoff '32
Elmer E. Nutting '39
Philip J. Nyquist '50
Daniel F. O'Grady '30
Reginald J. Odabashian '28
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Michael F. Oliver '65
Richard C. Olson '50
William J. O'Neil '58
Bradford W. Ordway '39
Robert A. Padgett '50
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Benjamin Pano '52
Alfred G. Parker '33
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William F. Payne '39
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James Z. Peepas '49
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Murad S. Piligian '49
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Manuel Renasco '46D
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Frederic D. Riley '63
Samuel Ringel '47
Kenneth N. Robbins '64
Roger P. Roberge '45
John J. Robinson '44
John E. Rogerson '42
Arthur S. Ross, III '63
Thomas H. Rothwell '53
Paul A. Rougeau '63
Eugene L. Rubin '53
Edgar P. Rundlett, Jr. '66
Robert E. Russell '46B
Merrill Rutman '61
John C. Ryder '64

Malcolm G. Safford	'38	Burton Shair	'65	Louis E. Stratton	'39	George T. Thrasher	'67	Robert C. Whittum	'6
Edward P. Saling, Jr.	'50	William J. Shepherd	'62	David E. Stuart	'57	Howard C. Tinkham	'49	Philip A. Wild	'5
William J. Samborski	'35	Louis Shulman	'50	Joseph W. Sullivan	'61	Raymond J. Tivnan	'59	Charles E. Wilkes	'6
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Richard P. Samolis	'53	Robert C. Simmonds, Jr.	'58	Robert E. Sullivan	'52	Robert L. Towne	'29	Samuel W.Williams, Jr.	'4
Donald R. Sanders	'49	John H. Sistare	'63	Robert B. Sundheim	'58	Ralph R. Trotter	'61	Richard B. Wilson	'3
Eli S. Sanderson	'50	Charles T. Smitb	'26	John B. Sutliffe	'37	Joseph P. Tulka	'31	Robert F. Wilson	'4
Reynald J. Sansoucy	'55	Harold F. Smith	'56	Eric M. Sweed	'67	William J. Tunney	'62	Joseph R. Winslow	'4
Vito J. Sarli, Jr.	'52	Richard D. Souren	'61	Sumner B. Sweetser	'33	John G. Underhill	'44	Wayne T. Wirtanen	'6
Edward A. Saulnier	'59	Nathan M. Southwick, Jr.	'27	Bernard D. Szarek	'54	Kenneth S. Vardion	'60	Russell W. Wood	'4
Walter C. Scanlon	'50	Thomas W. Spargo	'64	Henry D. Taylor	'51	Frank A. Verprauskus	'61	David F. Wright	'5
Ralph P. Schlenker	'57	Thomas E. Stamoulis	'56	Marshall B. Taylor	'68	Kenneth J. Virkus	'61	William H. Wyman	'6
Richard G. Schmitt	'52	George E. Stannard	'43	William E. Taylor	'27	Otto A. Wahlrab	'54	Alan P. Zabarsky	'7
Bruce E. Schoppe	'60	Anthony B. Stefanov	'51	Robert H. Telzerow	'44	Everett L. Walker	'59	Robert C. Zahnke	'6
Marc E. Schweig	'70	A. Kenneth Stewart, Jr.	'50	John A. Templeton	'45	Bruce R. Webber	'65	William Zarr	'6
Stephen Selinger	'69	Edward C. Stone	'60	Harry W. Tenney, Jr.	'56	David K. Weiner	'48	Arthur Zavarella	'3
Ralph E. Sellars, Jr.	'58	John P. Stone	'65	Stanley M. Terry	'40	Robert P. Weis	'57	William E. Zetterlund	'6
John C. L. Shabeck, Jr.	'33	Norman P. Stotz	'58	Charles J. Thompson	'26	Howard P. Whittle	'54		

District Summary — Final Report 1970-71 Annual Alumni Fund

CHAPTER	*RANK*	*No. in Chpt.*	*No. of Gifts*	*% Giving*	*Total Gifts*	*Average Gift*
Berkshire	21	70	19	27	$ 490.00	$ 25.79
Boston	16	943	292	31	22,071.00	75.59
Central New York	13	107	36	34	1,723.00	47.86
Chicago	26	115	27	23	4,685.00	173.52
Cincinnati	3	47	25	53	1,145.00	45.80
Cleveland	2	108	58	54	3,260.00	56.21
Connecticut Valley	10	358	133	37	10,853.00	81.60
Detroit	7	96	42	44	2,282.00	54.33
Eastern Connecticut	29	129	27	21	1,070.00	39.63
Hartford	18	664	194	29	10,917.00	56.27
Hudson-Mohawk	12	147	51	35	3,111.00	61.00
Los Angeles	18	268	77	29	5,270.00	68.44
New Haven	26	372	84	23	5,200.00	61.90
New York	20	549	152	28	11,854.00	77.99
North Shore	24	328	81	25	3,927.00	48.48
Northern California	5	179	85	47	5,473.00	64.39
Northern New Jersey	4	457	229	50	16,983.00	74.16
Pacific Northwest	16	36	11	31	2,428.00	220.73
Philadelphia	23	282	74	26	3,100.00	41.89
Pittsburgh	9	100	41	41	4,430.00	108.05
Rhode Island	11	331	120	36	4,519.00	37.66
Rochester-Genesee	8	111	47	42	1,607.00	34.19
Southeastern	25	129	31	24	1,560.00	50.32
St. Louis	5	19	9	47	513.00	57.00
Washington	14	395	126	32	13,137.00	104.26
Western New York	1	82	47	57	1,995.00	42.45
Wilmington	21	122	33	27	1,642.00	49.76
Worcester	14	1,525	491	32	36,278.00	73.89
Out of District	28	1,573	342	22	30,892.00	90.33
Others & Honorary	—	17	17	—	2,590.00	—
TOTALS		9,299	3,001	32%	$215,005.00	$ 71.64
Matching Gifts (Corporate Gifts To WPI To Match Gifts From Alumni).					21,231.69	
Grand Total					$236,236.69	

MEMBERS OF CLUBS

THE PRESIDENT'S CLUB

James E. Smith '06
James J. Shea '12
Earl C. Hughes '14
George W. Smith, Jr. '15
Alfred W. Francis '17
Benjamin Luther '18
John W. Coghlin '19
Howard S. Foster '19
Ray W. Heffernan '19
George R. Rich '19
Edward I. Burleigh '21
William L. Martin '21
Richard P. Penfield '21
Lincoln Thompson '21
Harold B. Whitmore '21
William E. Hanson '32
Henry B. Pratt '32
Howard G. Freeman '40
Leonard H. White '41
Irving J. Donahue, Jr. '44
James J. Clerkin, Jr. '45
Michael M. Galbraith '58

THE DEAN'S CLUB

Frederic R. Butler '20
Myron D. Chace '21
Robert E. Chapman '21
Philip K. Davis '21
E. Daniel Johnson '21
Lyle J. Morse '21
Paul S. Sessions '21
Wayne E. Keith '22
Helge S. Jobnson '24
David C. Bailey '25
Cbandler W. Jones '26
Russell G. Whittemore '27
Carl W. Backstrom '30
Albert N. Narter '30
Albert M. Demont '31
Francis S. Harvey '37
J. Morrison Smith '37
Charles C. Bonin '38
William B. Wadsworth '39
Raymond J. Forkey '40
Robert A. Muir '41
Howard C. Warren '42
John E. Hossack '46
Peter B. Myers '46B
Robert C. Wolff '51

THE JOHN BOYNTON CLUB

Louise I. Doyle
Richard J. Dearborn '03
Edmund K. Brown '13
Ralph M. Johnson '15
Moses H. Teaze '17
Norman P. Knowlton '18
Edward J. P. Fisher '21
Cyril Israel '21
Edward Rose '21
B. Clark Sbaw '21
Irving R. Smith '21
Paul D. Woodbury '21
Donald B. Wilson '24
Milton E. Berglund '26
Dwight E. Jones '28
William M. Lester '28
J. Kendall Fullerton '29
William R. Hutton '29
Russell C. Wiley '29
M. Lawrence Price '30
Nicholas S. Sculos '31
Herbert A. Stewart '31
Waldo E. Bass '33
Arthur E. Smith '33
Dwight J. Dwinell '34
Philip C. Sberburne '34
Frederick W. McIntyre, Jr. '35
William R. Steur '35
Artbur D. Tripp, Jr. '36
Richard F. Burke, Jr. '38
Wilder R. Carson '39
Billie A. Schmidt '39
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George W. Knauff '41
Fred S. Moulton '44
Olavi H. Halttunen '45
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George E. Comstock, III '46
William R. Grogan '46
Hazen L. Hoyt, III '46B
Robert S. Jacobson '46B
Edmund S. Oshetsky '46B
Thomas M. McCaw '46D
Francis W. Madigan, Jr. '53
Lawrence L. Israel '61
John J. McDonnell '62
Ivan V. Beggs '68

THE CENTURY CLUB

Ellery B. Paine '97
Winthrop G. Hall '02
Edwin M. Roberts '04
Harold B. Larned '05
Mark Eldredge '06
Percy M. Hall '07
Arthur J. Knight '07
Percy C. Smith '07
Herbert M. Carleton '08
Leon W. Hitchcock '08
George A. Barratt '09
Oliver B. Jacobs '10
Daniel H. Reamy '10
Edmund M. Flaherty '11
Earl W. Gleason '12
Frederick S. Carpenter '13
David G. Howard '13
Harry B. Lindsay '13
Norris D. Pease '13
J. Arthur Planteroth '13
Leon H. Rice '13
Farquhar W. Smith '13
Ellwood N. Hennessy '14
George Ross '14
William W. Spratt '14
Benjamin B. D'Ewart '15
John W. Gleason '15
Everett Hutchins '15
Raymond P. Lansing '15
Douglas F. Miner '15
E. Taylor Warren '15
Carl H. Burgess '16
Leslie J. Chaffee '16
Frank G. Gifford '16
Roland D. Horne '16
Robert E. Lamb '16
James C. Walker '16
Selden T. Williams '16
Aurelio E. Zambarano '16
Arthur E. Gorman '17
Ronald E. Greene '17
John M. Leggett '17
Warren W. Parks '17
Philip C. Pray '17
Henry W. Sheldrick '17
John R. Wheeler '17
Levi E. Wheeler '17
Walter B. Dennen '18
George C. Griffith '18
Carl I. Benson '19
Thomas B. Rutberford '19
Robert C. Sessions '19
Paul M. Abbott '20
Arvid E. Anderson '20
Harold G. Hunt '20
Burton W. Marsh '20
Carlton J. O'Neil '20
Robert A. Peterson, Sr. '20
George L. White '20
Harold S. Black '21
Corneluis A. Callahan '21
Irving M. Desper '21
Ralpb L. Draper '21
Robert M. Eldred '21
Carroll A. Huntington '21
Robert W. Perry '21
Carl E. Skroder '21
Foster E. Sturtevant '21
John W. Williams '21
Earl H. Winslow '21
Charles I. Babcock '22
Charles N. Clarkson '22
Robert W. Cushman '22
Weston Hadden '22
Lawrence K. Hyde '22
Lloyd F. McGlincy '22
Edwin L. Sholz '22
J. Carleton Adams '23
Edwin B. Coghlin '23
Judson M. Goodnow '23
Kenneth E. Hapgood '23
Percival E. Meyer '23
Howard S. Nutting '23
Richard H. V. Shaw '23
Richard Walberg '23
J. Norman Alberti '24
Edward G. Beardsley '24
Leslie J. Hooper '24
Simeon C. Leyland '24
John N. Styffe '24
James C. Irish '25
Lutber B. Martin '25
Henry L. Mellen '25
L. Ivan Underwood '25
Richard S. Boutelle '26
Leonard C. Calder '26
Phillip R. Delphos '26
Charles M. Healey, Jr. '26
Archie J. Horne '26
Eugene M. Hunter '26
John S. Miller '26
Charles M. Moran '26
Donald F. Sears '26
George J. Heckman '27
Robert E. Johnson '27
Walter G. Johnson '27
Charles F. Monnier '27
Charles S. Moore '27
Carleton R. Sanford '27
Frederick H. Knight '28
Alexander L. Naylor '28
Arthur M. Tarbox '28
Charles A. Warren '28
Nathaniel Clapp '29
J. Howard Germain '29
Holbrook L. Horton '29
Frank R. Joslin '29
Halbert E. Pierce, Jr. '29
Joseph R. Rogers, Jr. '29
E. Waldemar Carlson '30
C. Eugene Center '30
Charles H. Cole '30
John W. Conley '30
William W. Locke '30
George A. Marston '30
Daniel F. O'Grady '30
Fred P. Peters '30
Philip M. Seal '30
Warren C. Whittum '30
Edward J. Bayon '31
Robert Bumstead '31
Paul H. Fittz '31
Milton D. Gleason '31
A. Wallace Gove '31
Jay M. Harpell '31
Oliver B. Merrill '31
Trueman L. Sanderson '31
A. Francis Townsend '31
Robert S. Williamson '31
William W. Asp '32
Paul E. Nelson '32
Donald W. Putnam '32
Robert E. Ferguson '33
Kenneth E. Gleason '33
Gilbert U. Gustafson '33
Edwin L. Johnson '33
Aram Kalenian '33
Alfred G. Parker '33
Jeremiah H. Vail '33
George G. Gleisberg '34
Clayton E. Hunt, Jr. '34
John H. Keenan '34
Luther C. Leavitt '34
Charles W. McElroy '34
William E. Mesh '34
Raymond H. Neubauer '34
Everett F. Sellew '34
Gordon P. Whitcomb '34
Edward J. Abendschein '35
John B. Coyle '35
James J. Gushaw '35
Leonard G. Humphrey, Jr. '35
Roland L. Nims '35
Raymond J. Quenneville '35
Emerson J. Robinson '35
M. Kent Smith '35
B. Leigbton Wellman '35
Plummer Wiley '35
Carleton W. Borden '36
John R. Brand '36
William R. Hannah '36
John J. O'Donnell '36
Stedman W. Smith '36
Philip G. Atwood '37
Martin G. Caine '37
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C. Chapin Cutler '37
Morton S. Fine '37
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G. Albert Anderson '51
Gerald F. Atkinson '51
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Micbael S. Zucker '53
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Werner M. Neupert '54
Walter A. Reibling '54
Edwin Shivell '54
James D. Coulopoulos '55
Kenneth H. Russell '55
Tarek M. A. Shawaf '55
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Clifford W. Burwick '56
Edwin B. Coghlin, Jr. '56
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John M. Nash '56
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David A. Pratt '56
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Donald F. Berth '57
John W. Braley, Jr. '57
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Paul W. Bayliss '60
Dwight M. Cornell '60
Sang K. Lee '60
John S. O'Connell, Jr. '60
Bernard L. Tetreault '60
Bradley E. Hosmer '61
John W. Powers '61
Frederic A. Stevens '61
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Bruce W. Woodford '61
Keyren H. Cotter, Jr. '62
David L. Goodman '62
Walker T. Thompson '62
John R. Tufano '62
Robert P. Wilder '62
Joseph V. Bucciaglia '63
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Robert J. Hermes '63
Robert M. Malbon '63
Gordon O. Stearns '63
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J. Michael Anderson '64
Thomas S. Baron '64
Thomas J. Modzelewski '64
Frederic C. Scofield, III '64
Walter J. Ruthenburg, III '65
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Stephen J. Hebert '66
Peter G. Stebbins '66
Robert G. Balmer '68
Gerard E. Caron '68
Eric K. Durling '68
Thomas A. Gelormino '68
Craig F. Bradley '69
Robert W. Mayer '69

DEGREE DEPARTMENT GIVING ANALYSIS

	Total Alumni	Contributors	Percent Participation	Total Contributions	Average Gift
Civil Engineering	1,236	400	32.4	$ 24,440	$ 61.10
Chemical Engineering	941	262	27.8	10,695	40.82
Chemistry	489	187	38.2	20,334	108.74
Electrical Engineering	2,457	779	31.7	67,231	86.30
General Science	18	2	11.1	520	260.00
Management Engineering	114	19	16.7	400	21.05
Mathematics	163	26	16.0	1,178	45.31
Mechanical Engineering	2,729	976	35.8	73,646	75.46
Physics	319	69	21.6	3,397	49.23
Others	13	0	0	0	0
Totals	8,479	2,720	32.1	201,841	74.21
Non-Degree Holders	820	281	34.3	13,164	46.85
Grand Totals	9,299	3,001	32.3	$215,005	$ 71.64

CONTRIBUTORS TO 1970-1971 ANNUAL FUND

Honorary Alumni

IN MEMORIAM
George H. Haynes

1889
IN MEMORIAM
Myron J. Bigelow

1897
2 MEMBERS
1 Contributor
Ellery B. Paine

1898
1 MEMBER
1 Contributor 100%
*Frank C. Harrington

1901
7 MEMBERS
3 Contributors 43%
*Theo Brown
James W. Freeman
*George K. Howe

1902
4 MEMBERS
1 Contributor 25%
*Winthrop G. Hall

1903
10 MEMBERS
2 Contributors 20%
Richard J. Dearborn
Henry J. Potter

1904
4 MEMBERS
2 Contributors 50%
Seth R. Clark
Edwin M. Roberts

1905
7 MEMBERS
2 Contributors 29%
*Harold B. Larned
Ernest C. Morse

1906
13 MEMBERS
5 Contributors 38%
Elbert C. Aldrich
Mark Eldredge
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Albert L. Delude, Jr.
Allen R. Deschere
Richard J. Donovan
*Riebard M. Elliott
Robert A. Evans
Neil A. Fitzgerald
Norman M. Gamaebe
Perry F. Grenon
Allen H. Gridley, Jr.
Howard W. Haynes
J. Adams Holbrook
William D. Holcomb
Raymond K. Houston
Walter J. Howard
Donald W. Howe, Jr.
Walter E. Knapp
Peter P. Koliss
Albert J. Kullas
M. Leonard Kuniholm
John G. Lawrenee
A. George Mallis
Daniel G. Mazur
John S. Mudgett
Riehard G. Munson
Paul M. Murphy
Robert W. O'Brien
Raymond J. Perreault
Donald F. Pethybridge
Mauriee Pressman
William S. Proetor
Henry M. Ritz
Malcolm G. Safford
Edward A. Sawtell
John B. Scalzi
Warren H. Sehafer
Philip K. Seaver
Robert L. Somerville
Dana D. Stratton
Francis B. Swenson
*Robert M. Taft
Edward J. Traynor
Earle R. Viekery, Jr.
Murray C. Wilson
Francis L. Witkege

1939
141 MEMBERS
56 Contributors 40%

*Walter L. Abel
Cbarles H. Amidon, Jr.
Roland N. Anderson
John A. Backes
Robert V. Bergstrom
*Jaek F. Boyd
Harrison K. Brown
*Donald M. Burness
*Wilder R. Carson
*Maleolm R. Cbandler
Allan H. Chase
Arthur N. Cooley
Ralpb E. Dudley
George E. Feiker, Jr.
George C. Graham, Jr.
Jaeob J. Hagopian
*John G. Holliek
*Donald E. Houser
John W. Hughes
Harold W. Humphrey, Jr.
*David H. Hunt
Roger L. Iffland
Gleason W. Jewett
*Samuel B. Kaplan
Oiva J. Karna
William L. Kay
*Carl A. Keyser
John H. Laneaster
Albert M. Lavan
Carl W. Lewin
Carl J. Lindegren, Jr.
Robert S. Lloyd
*Artbur H. Mallon
Robert W. Martin
Ward D. Messimer
Robert A. Morse
Albert A. Nims, Jr.
C. Kenneth Olson
Bradford W. Ordway
Norman A. Packard
William F. Payne
John F. Peavey
Frederiek S. Pyne
Albert J. Raslavsky
Burton D. Rudniek
*Billie A. Sehmidt
William J. Sexton, Jr.
Norman W. Stewart
*Frans E. Strandberg
Louis E. Stratton
Gordon L. Thompson
*Charles W. Thulin
William B. Wadsworth
Harold E. White
Riehard B. Wilson
George W. Yule

1940
155 MEMBERS
61 Contributors 40%

Clayton H. Allen
Eric S. Anderson
*Donald R. Bates
Ralston E. Bates
Max Bialer
George S. Bingham
Wilfred T. Blades
Kennetb R. Blaisdell
Maleolm S. Burton
Frank A. Crosby, Jr.
Edward D. Cross
Frank J. Delany
S. Carlton Diekerman
Robert E. Dunklee, Jr.
*Raymond J. Forkey
*Kenneth C. Fraser
Howard G. Freeman
Clyde L. Gerald
W. Clark Goodehild, Jr.
*Frank G. Gustafson
*Joseph M. Halloran, Jr.
*Robert W. Hewey
Robert E. Higgs
*Albert E. Howell, Jr.
Harding B. Jenkins
Fritz E. Jobanson
Stanley W. Kimball
Arthur R. Koerber
David A. Kuniholm
Norman U. Laliberte
Carl W. Larson
John A. Leaeh, Jr.
Vernon J. Liberty
*Russell A. Lovell, Jr.
*Noel R. Maleady
Kenneth H. MeClure
Philip E. Meany
Herbert F. Morse
Peter A. Muto
Lawrenee C. Neale
*John H. Peters III
Mareus A. Rhodes, Jr.
*Milton E. Ross
Robert S. Roulston
Alden T. Roys
Richard F. Scharmann
Raymond B. Shlora
S. Merrill Skeist
Everett P. Smith
Joseph V. Smolinski
Walter H. Sodano
Frank B. Stevenson
Francis E. Stone
*Lawrence R. Sullivan
Walter J. Sydor
Stanley M. Terry
Daniel W. Von Bremen, Jr.
Randall Whitehead
Charles J. Wilde
Tbomas S. Wingardner
David B. Zipser

1941
156 MEMBERS
60 Contributors 39%

Benjamin S. Bean
Albert G. Bellos
Earle K. Boyd
Robert B. Brautigam
Irving A. Breger
William J. Carroll, Jr.
Paul A. Carullo
*Frederiek B. Chamberlin
Alexander S. Chodakowski
Sidney W. Clark
George A. Cowan
Francis W. Crowley
Thomas R. D'Errieo
Kenneth R. Dresser
George F. George
Riehard Goulding
Lloyd E. Greenwood
Gordon T. Gurney
Marvin Handleman
John T. Haran
Harry A. Haszard
James H. Hinman
F. Harold Holland, Jr.
Stephen Horbal
Joseph P. Jurga
*Norman G. Klaueke
Melvin H. Knapp
George W. Knauff
Vietor A. Kolesh
George P. Lentros
Frank R. Lindberg
*Stanley J. Majka
James E. McGinnis
F. Douglas McKeown
Herman Medwin
John W. Morse
*Robert A. Muir
Paul G. Nystrom
Norman H. Osgood

Henry Palley
Donald F. Palmer, Jr.
*Russell W. Parks
George K. Peck
Stannard M. Potter
Stanley S. Ribb
William C. Richardson
Harold E. Roberton, Jr.
William P. Simmons
Charles O. Smith
*Donald E. Smith
Sidney Soloway
Ralph W. Stinson
Robert W. Tuller
Anton J. West, Sr.
Josepb W. Whitaker, Jr.
Leonard H. White
William E. Wiley
*Robert F. Wilson
*Alfred E. Winslow
John M. Wolkonowicz

1942
162 MEMBERS
64 Contributors 40%

*Robert E. Allen
Jonathan B. Allured
E. Curtis Ambler
Frederick A. Anderson
Jobn M. Bartlett, Jr.
Robert M. Bendett
*Norman C. Bergstrom
*Gerald J. Bibeault
Joseph W. Blaine, Jr.
Lester A. Bolton, Jr.
Roy F. Bourgault
Robert C. Chaffe, Jr.
Joseph N. Christian
*Harold L. Crane
Harold E. Crosier, Jr.
Wilbur H. Day
Walter K. Deacon
*Paul C. Disario, Jr.
Eric W. Essen
James Fernane
Ralph G. Fritch
Clinton A. Gerlach
Haskell Ginns
Herbert M. Goodman
Warren G. Harding
Philip J. Hastings
Edward A. Hebditch
Robert H. Hodges
Robert L. Holden
*Peter P. Holz
James D. Houlihan
William S. Jackson, Jr.
Richard H. Kimball, Jr.
Elmer E. Larrabee
Frederick W. Lindblad
A. Cline Mendelsohn
Frederic C. Merriam
F. Gordon Merrill
Alexander Mikulich
Francis J. Oneglia
Rodney G. Paige
Charles H. Parker
*Robert W. Pease
Russell C. Proctor, Jr.
Jobn H. Quinn, Jr.
Gordon H. Raymond
*James F. Robjent
*John E. Rogerson
Adolph A. Salminen
*Elton J. Sceggel
Leonard I. Smith
Victor H. Thulin
*Etienne Totti, Jr.
*Noel Totti, Jr.
Howard C. Warren
J. Richard Weiss, Jr.
John P. Wells
Samuel W. Williams, Jr.
Arthur D. Wilson
Norman A. Wilson
William C. Woods, Jr.
John B. Wright
Paul C. Yankauskas
*Warren B. Zepp

1943
144 MEMBERS
55 Contributors 39%

Everett J. Ambrose, Jr.
Robert A. Bierweiler
*Harold W. Brandes
Hugh M. Brautigam
Nelson M. Calkins, Jr.
*Edwin C. Campbell
Warren H. Chaffee
Henry C. Durick, Jr.
*Jackson L. Durkee
*Richard F. Dyer
*Lee P. Farnsworth
*J. Perry Fraser
George W. Golding, Jr.
*Robert E. Gordon
Philip J. Gow
Arthur V. Grazulis
William S. C. Henry
*Leonard Hershoff
Glennon B. Hill
Franklin K. Holbrook
Calvin B. Holden
Chester E. Holmlund
John W. Huckins
Joseph M. Jolda
Arnold R. Jones
Averill S. Keith
*Friend H. Kierstead, Jr.
*Victor E. Kohman
Arthur E. Lindroos
John McLay, Jr.
Artbur H. Medine, Jr.
*Behrends Messer, Jr.
S. Bailey Norton, Jr.
Earl G. Page, Jr.
Robert A. Painter
James H. Parliman
Theodore A. Pierson III
Edward H. Peterson
*James J. Pezza
Leon H. Rice
Donald M. Roun
*Donald H. Russell
Alan N. Sanderson
*Richard B. Shaw
Ralph L. Smith, Jr.
Bruce E. Smyth
*Raymond W. Southworth
George E. Stannard
Frank Szel
*William W. Tunnicliffe
Alfred Voediscb, Jr.
Pierre Volkmar
Rollin M. Wheeler
Richard Whitcomh
Stanley T. Wolcott

1944
160 MEMBERS
50 Contributors 31%

IN MEMORIAM
*John N. Wholean
*Gordon C. Anderson
Herbert Asher
C. Edward Bean
Glen R. Betz
*John A. Bjork
Harold W. Blake
*Norman S. Blodgett
Philip P. Brown
*Ricbard A. Carson
Charles S. Cooper
Lee G. Cordier
Calvin M. Davis
Benjamin B. D'Ewart
Irving James Donahue, Jr.
Peter C. Dooley, Jr.
Einar A. Eriksen
David M. Field
Irving B. Gerber
Bruce D. Hainsworth
Dwight E. Harris
*Raymond E. Herzog
Richard G. Holden

FRATERNITY GIVING ANALYSIS 1970-71

	Total Alumni	*Contributors*	*Percent Participation*	*Total Contributions*	*Average Gift*
Alpha Epsilon Pi	389	111	28.5	$ 4,847	$ 43.67
Alpha Tau Omega	671	242	36.1	16,576	68.50
Delta Sigma Tau	15	4	26.7	85	21.25
Lambda Chi Alpha	609	230	37.8	12,127	52.73
Phi Gamma Delta	577	197	34.1	14,628	74.25
Phi Kappa Theta	663	195	29.4	15,210	78.00
Phi Sigma Kappa	710	252	35.5	34,595	137.28
Sigma Alpha Epsilon	645	227	35.2	22,631	99.70
Sigma Pi	59	12	20.4	460	38.33
Sigma Phi Epsilon	702	245	34.9	19,646	80.19
Theta Chi	706	261	37.0	16,866	64.62
Tau Kappa Epsilon	151	36	23.8	956	26.56
Totals	5,897	2,012	34.1	158,627	78.84
Non-Fraternity	3,402	989	29.1	56,378	57.01
Grand Totals	9,299	3,001	32.3	$215,005	$ 71.64

Daniel Koval
*Erling Lagerbolm
George A. Latinen
John W. Lebourveau
John A. Lewis
Robert H. Maass
Lloyd G. Mann
*Vernon A. McLaskey
Fred S. Moulton
John P. Newton, Jr.
Douglas G. Noiles
*John W. Patterson
C. Raymond Peterson
William E. Powers, Jr.
Paul I. Pressel
L. Howard Reagan
Lynwood C. Rice
*Jobn J. Robinson
George W. Sargent
Herbert E. Sheldon
Cbarles C. Tanona
Christopher T. Terpo
Stepben J. Turek, Jr.
Robert M. Twitchell
*John G. Underhill
Franklyn Williams
*Kimball R. Woodbury

1945
144 MEMBERS
45 Contributors 31%

Frank C. Baginski
Edwin G. Baldwin
*Albert C. Berry
Robert M. Buck
Carl C. Clark
James J. Clerkin, Jr.
Paul M. Craig, Jr.
Stanley R. Cross, Jr.
*William P. Densmore
Edward J. Dolan
Robert E. Duffy
Harris J. Dufresne
Robert M. Edgerly
*Richard S. Fitts
Warren H. Fitzer
*Harold Fleit
John W. Fondahl
Anson C. Fyler
Howard D. Gerring
Irving Goldstein
Olavi H. Halttunen
John T. E. Hegeman
John R. Horan
John P. Hyde
Russell E. Jenkins
Charles H. Johnson
Philip B. Jones
*Franklin S. June
Owen W. Kennedy, Jr.
Paul N. Kokulis
Ernest R. Kretzmer
*Eugene C. Logan
Robert W. Lotz
Jobn B. McMaster
*Cbarles A. Morse, Jr.
Roger N. Perry, Jr.
Robert E. Powers
Roger P. Roberge
Robert E. Scott
James J. Shea
Frank J. Stefanov
Stanley B. Thomson
*George V. Uihlein, Jr.
*Warren H. Willard
Edward R. Zieve

1946
137 MEMBERS
30 Contributors 22%

Philip S. Adams
Robert C. Appenzeller
Robert L. Ballard
John Lott Brown
Nestor Brown, Jr.
James Bush, Jr.
Rodney S. Chase
George E. Comstock III
Truman S. Dayton
*Alpheus M. Farnsworth
Robert H. Farwell
William R. Grogan
John E. Hossack
*Joseph H. Johnson, Jr.
Frederick J. Kull
Calvin F. Long
Kenneth A. Lyons
*James H. Maloney, Jr.
Frederick W. Marvin
*Norman W. Padden
Charles M. Richardson
Richard L. Rodier
Carl F. Simon, Jr.
Herbert H. Slaughter, Jr.
*J. Larry Stewart
Richard M. Underwood, Jr.
*Davis S. Watson
William T. Wells
Malcolm K. White
Thomas M. Zajac

1946B
105 MEMBERS
28 Contributors 27%

Theodore A. Balaska
Walter J. Bank
William R. Bingham
Robert F. Budge
James R. Davis
Robert B. Davis
Theodore E. Gazda
Prescott E. Grout
Garabed Hovhanesian
Hazen L. Hoyt III
Robert S. Jacobson
*Wilbur C. Jones
Alan Kennedy
Harry J. Mehrer, Jr.
Malcolm A. Morrison
*Peter B. Myers
Thomas W. O'Brien
Edmund S. Osbetsky
Julius A. Palley
Joseph F. Pofit
Daniel J. Rice
*Albert E. Rockwood, Jr.
John E. Runninger
Edward H. Smith
Donald A. Soorian
Clay B. Wade
Delbert E. Walton
Floyd A. Wyczalek

1946C
12 MEMBERS
6 Contributors 50%

Joseph J. Conroy, Jr.
Philip G. Duffy
Robert E. Hull
John H. Knibh, Jr.
Cecil Walton, Jr.
Jobn E. Wilson

1946D
63 MEMBERS
15 Contributors 24%

Allen Breed
James B. Evans, Jr.
Leslie Flood
Jordan Franklin
J. Myron Johnson
John Lee
Joseph P. Manna
Thomas M. McCaw
John C. Meade
Walter O. Muller
Orville T. Ranger
Manuel Renasco

George W. Schott
Adelbert W. Whitman
David J. Wright

1947
77 MEMBERS
24 Contributors 31%

*Robert E. Begley
Carrol E. Burtner
Morrel H. Cohen
Wilfred L. Derocher, Jr.
Robert Fletcher
*Allan Glazer
John P. Harding, Jr.
George E. Kent, Jr.
Edward J. Lemieux
Daniel G. Lewis, Jr.
Teddy J. Morawski
Paul D. O'Donnell
Edward C. Perry, Jr.
V. Lawrence Petersen
William J. Rice
Samuel Ringel
Walter A. Skers
Russell M. Smith
Edward T. Swierz
Kenneth H. Truesdell
Milford R. Vandusen
John H. Williams, Jr.
William A. Williams
Vincent A. Zike

1948
191 MEMBERS
63 Contributors 33%

George W. Allen
*David L. Anthony
Richard A. Atwood
Robert E. Beauregard
*William A. Beers
Eli G. Braley, Jr.
Saverio D. Caloccia
Edward H. Coburn, Jr.
*Samuel W. Cocks
John J. Concordia
*William D. Coulopoulos
Norman L. Diegoli
F. Robert Dieterle
Edmund C. Dowse, Jr.
Edmund J. Eager
John W. Ebbs
*Paul E. Evans
*Robert G. Ferguson
*Niel I. Fishman
Donald E. Flohr
*Frederick A. Gammans
Albert S. Goldberg
Malcolm G. Gordon
Harold B. Guerci
Gordon E. Hall
Sameer S. Hassan
*Thomas D. Hess
Lawrence F. Hine
Frank S. Holby
Paul C. Holden
*Richard K. Horne
*Robert H. Houghton
Robert E. Hubley
Thomas F. Hunter
Otto Kern, Jr.
Maclean Kirkwood, Jr.
Russell H. Krackhardt
Francis X. Lambert
William M. Land, Jr.
*Lynwood W. Lentell
Robert M. Lerner
Leon Lipton
Charles L. Loveridge, Jr.
*James G. McKernan
*Albert J. Merlini
*Allen M. Mintz
Robert E. Nowell
Alan R. Pearlman
Arthur L. Pike
Clark L. Poland
*Edward J. Powers
Alan K. Riedel
Edmund J. Salate
Grant W. Schleich
Kenneth E. Scott
*Daniel H. Sheingold
*Bernard Siegel
Roger C. Staples
Prescott A. Stevens
George Strunz, Jr.
Alfred C. Syiek
John S. Wolanin, Jr.
Russell W. Wood

1949
243 MEMBERS
84 Contributors 35%

*Walter D. Allen, Jr.
*Chester L. Anderson, Jr.
Matthew M. Babinski
Robert A. Bareiss
Paul H. Beaudry
Walter L. Beckwith, Jr.
*Karl R. Berggren, Jr.
Francis J. Bigda
Thaddeus S. Bonczyk
Lawrence B. Borst
Gordon S. Brandes
Lawrence C. Brautigam
Fred J. Brennan
Eugene S. Briggs
Richard W. Brown
Philip G. Buffinton
Thomas R. Carlin

CHAPTER LEADERS — AVERAGE GIFT

Chapter	*Average Gift*
1. Pacific Northwest	$220.73
2. Chicago	$173.52
3. Pittsburgh	$108.05
4. Washington	$104.26
5. Out-of-District	$ 90.33

*Walter J. Charow
Howard R. Cheney, Jr.
Carroll B. Church
Robert W. Cook
*Thomas J. Coonan III
Earl R. Cruff
Paul D. Curran
Wellen G. Davison
*Walter G. Dick
Paul R. Dulong
*Malcolm E. Fersorr
Samuel E. Franc, Jr.
*James M. Genser
Charles F. Gerber
Gerald H. Gleason
Robert N. Gowing
William V. Halishak
Albert Hardaker
George K. Howe
*William A. Jacques
*Peter A. Kahn
*Peter Kalil
Charles T. Layton
Robert E. Lazzerin, Jr.
Daniel L. Lintz
John I. Logan
Lester H. Longton, Jr.
John W. Luoma
*Sidney Madwed
William C. Marcoux
Daniel L. McQuillan
Guy D. Metcalf
Harry H. Mochon, Jr.
Henry G. Mogensen, Jr.
Clifton C. Nickerson
*Henry J. Oletz, Jr.
*James F. Oregan
*Albin O. Pearson
Herbert M. Pettee
Murad S. Piligian
*William J. Ploran
Robert K. Quattrochi
Edward W. Randall
William C. Reeves
Raymond J. Remillard
Carl W. Ringquist, Jr.
Hugh M. Robinson
Robert A. Rowse
Ellsworth M. Sammet
Malcolm A. Sanborn
Donald R. Sanders
John D. Saunier
Arthur J. Sherman, Jr.
Donald R. Skeffington
*Carrol G. Smith
Jeremy W. Smith
Stephen J. Spencer
Joseph T. Starr
*Alfred Strogoff
*Donald Taylor
Howard C. Tinkham
Stephen J. Ucich
Harvey E. Vigneault
*Burl S. Watson, Jr.
Donald G. Weikman
John J. Wheeler
John H. Williams

1950
213 MEMBERS
83 Contributors 39%

Raymond L. Alvey, Jr.
John O. Archibald, Jr.
William E. Bachmann
Henry H. Baker, Jr.
Norman E. Baker
Roland F. Bedard
Richard G. Beschle
John F. Brierly
Paul J. Brown
*John P. Burgarella
*Joseph J. Burgarella, Jr.
Richard H. Carlson
Stanley P. Carlson
*William B. Carpenter
Harvey W. Carrier
Everett S. Child, Jr.
Robert Chin
John T. Cocker
Richard Connell
Donald B. Crane
Thaddeus F. Cromwick
Neil J. Crowley
*Henry S. C. Cummings, Jr.
David W. Danielson
James C. Dean
Donald E. Deming
*Donald W. Dodge
George E. Engman
Howard S. Ewing
William F. Fitzmaurice
Stanley Friedman
Donald W. Giles
Irwin L. Goodchild, Jr.
Saul Gordon
Fred W. Grant, Jr.
William C. Griggs
*R. Reed Grimwade
Charles P. Gure
Earle A. N. Hallstrom
Frank W. Harding III
Daniel J. Harrington, Jr.
Richard E. Hathaway
Sumner W. Herman
Lawson T. Hill, Jr.
David J. Hudson
*Arthur W. Joyce, Jr.
Edmond H. Judd
*Francis E. Kearney
Walther A. Keyl
G. Willard King, Jr.
Ernest A. LaRose
John C. Margo, Jr.
Norman B. Maynard
Richard W. McGraw
Thomas J. McNamara
James H. Meiklejohn, Jr.
Edmund L. Nichols
Martin Nisenoff
Helge V. Nordstrom
Paul D. Nyquist
Richard C. Olson
Robert A. Padgett
Kennetb W. Parsons
Frank W. Pease
John W. Peirce
Robert C. Proctor, Jr.
Lester J. Reynolds, Jr.
*Eli S. Sanderson
Walter C. Scanlon
Paul F. Seibold
Frank J. Sherman III
Louis Shulman
John C. Slonczewski
*Robert E. Smith
James C. J. Sullivan
Edmond T. Suydam
Edward J. Sydor
John R. Taylor
Donald W. Thompson
Joseph R. Tocgemann
Robert J. Van Amburgh
Edgar R. Vollaro
Jeremy Welts

1951
194 MEMBERS 37%
71 Contributors

Warner S. Adams
*G. Albert Anderson
Walter R. Anderson
Gerald F. Atkinson
*Ralph W. Auerbach, Jr.
*Bruce M. Bailey
William T. Baker
*Leon H. Bassett
Guido Biagini
Martin G. Bromberg
Ashton B. Brown
Robert A. Busch
Bernard D. Callahan
Robert N. Cochran
Richard A. Coffey, Jr.
Donald J. Corey
Richard Davis
John A. Dillon, Jr.
*H. Stuart Dodge
Walter A. Finneran
Rafael R. Gabarro
*John C. George
Arthur H. Gerald, Jr.
Edward A. Green
*Aime J. Grenier
Halsey E. Griswold
Peter Groop
*William H. Haslett, Jr.
Bradford F. Hawley
Herbert J. Hayes, Jr.
Richard E. Howard
*Harvey L. Howell
Carl E. Johnson
Laurent C. Jutras
John R. Keefe, Jr.
Roger W. Lane
*Leo E. Lemere, Jr.
*Edward L. Lewis
Stanley R. Lindberg
Albert H. Lorentzen
Robert M. Luce
Dewey R. Lund
Frank A. MacPherson
Kenneth E. Mayo
*William J. McNeil
Theodore A. Mellor
Stanley L. Miller
Edward C. Moroney, Jr.
*Charles F. Mulrenan
*Duncan W. Munro
Edwin H. Nahikian
*Roy H. Olson
Irving F. Orrell, Jr.
Charles C. Peirce
Neal D. Peterson
Donald L. Poggi
John L. Reid
*James E. Rich
*Robert W. Rodier
*Kurt A. Schneider
Lester A. Slocum, Jr.
Vartkes Sohigian
A. William Spencer
Anthony B. Stefanov
Donald F. Stockwell
*Roger W. Swanson
Henry D. Taylor
Joseph S. Vitalis, Jr.
Alfred J. Wbeeler
Alan E. Willis
*Robert C. Wolff

1952
174 MEMBERS
56 Contributors 32%

*Daniel T. Bernatowicz
George K. Borski
Albert N. Brauer
*Charles F. Crathern III
Philip B. Crommelin, Jr.
John W. Diachenko
Monroe M. Dickinson, Jr.
*Michael J. Essex, Jr.
*David R. Fairbanks
Edward M. Felkel
*Ray N. Fenno
Alan S. Foss
Richard T. Gates
Richard C. Gillette
Robert H. Goff
Robert A. Heller
Edward A. Hjerpe, Jr.
Eugene A. Jakaitis
Walter F. Jaros, Jr.
*George Jeas
*Joseph Jiunnies
*Robert D. Johnson
Earl C. Klaubert
Chester S. Kolaczyk
Donald M. Krauss
David A. Kujala
Kenneth T. Lang
*Elliott W. Lewis
Joseph D. Lojcwski
Leo O. Lutz
John M. Maljanian
Harold J. Manley
Philip J. O'Connor
*Everett B. Palmer
Benjamin Pano
Charles F. Reichert
H. Burton Rendall
Warren W. Root
*Walter H. Rothman
George M. Seidel
Henry Sbapiro
*F. Patterson Smith
Roland R. St. Louis
Robert E. Sullivan
*Charles W. Thrower
Charles P. Toscano
John M. Tracy
*Alden F. Tucker
*Robert F. Turek
*George F. Whittle
*Richard B. Will
*Gordon C. Willard
Robert G. Williams
Edward A. Wolfe
Donald B. Youngdahl
Richard A. Zeleny

1953
174 MEMBERS
55 Contributors 32%

John E. Allen, Jr.
Conrad M. Banas
Robert T. Baxter
*David E. Beach
Robert E. Behringer
*John R. Black
Henry J. Camosse
Donald R. Campbell
Joseph W. Carr
Robert E. Chiabrandy
Arthur L. Danforth
*Richard A. Davis
Frederick De Boer
*Charles O. Decband
*Ralph J. Digiovanni
*David M. Elovitz
Robert W. Fitzgerald
Charles D. Flanagan
John E. Flynn
*Kendall F. Forsberg
John H. Gearin, Jr.
Richard J. Hall
David B. Hallock
Sidney R. Harvey
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Kenneth M. Healy
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1954
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1955
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1960
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William H. Gill, Jr.

CHAPTER LEADERS — PERCENTAGE PARTICIPATION

CHAPTER	% PARTICIPATION	KEYMAN
1. Niagara Peninsula	57%	O. Arnold Hansen, '25
2. Cleveland-Akron	54%	Richard D. Popp, '54
3. Cincinnati	53%	Stephen D. Donahue, Jr., '63
4. Northern New Jersey	50%	George A. Walker, '22
		Paul W. Bayliss, '60
5. Northern California	47%	Raymond J. Remillard, '49
6. St. Louis	47%	Herman W. Dorn, '33

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1962
244 MEMBERS
59 Contributors 24%

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62 Contributors 25%

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1964
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John W. Miller

CHAPTER LEADERS — CONTRIBUTION GOALS

CHAPTER	TOTAL CONTRIBUTIONS	GOAL	% OF GOAL
1. Pacific Northwest	$ 2,428	$ 800	303
2. Chicago	4,685	3,500	134
3. Northern California	5,473	4,500	122
4. Northern New Jersey	16,983	15,000	113
5. Washington	13,137	12,000	109
6. Cleveland	3,260	3,000	109

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Elliot F. Whipple
Wayne T. Wirtanen

1968
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Daniel C. Creamer
Robert H. Deflesco, Jr.
John C. Demeo
Robert R. Demers
Michael A. Dipierro
Eric K. Durling
Pentti O. Elolampi
Wayne N. Fabricius
Robert A. Falciani
Douglas G. Ferry
Richard A. Formato
Edward L. Gallo
Robert J. Gallo
George F. Gamache
Thomas A. Gelormino
Robert V. Genereux
David J. Gumbley
*Edward M. Harper
*Robert D. Hickey
*John H. Holmes
Robert J. Horansky
Ronald E. Jodoin
Chester J. Kasper
Gary N. Keeler
Walter A. Kistler
Douglas W. Klauber
Charles D. Konopka
John J. Kraska, Jr.
C. David Larson
*Michael R. Latina
*Andrew A. Lesick
Rodney W. Logan
Walter C. Lynick
*Israel Mac
*John D. MacDougall, Jr.
Paul D. Matukaitis
John H. McCabe
Peter F. McKittrick
Douglas A. Murray
Robert A. Nichols
Cary A. Palulis
Stephen W. Petroff
*Roger L. Phelps
Wayne L. Pierce
Andrew L. Piretti
Francis J. Posselt, Jr.
William D. Poulin
Roger W. Pryor
Raymond F. Racine
*David H. Rice
*Peter A. Saltz
Timothy J. Schaffernoth
Gregory H. Sovas
Franklyn H. Taylor
*Marshall B. Taylor
Firm C. Weaver

1969
332 MEMBERS
56 Contributors 17%

*Lawrence R. Areskog
Normand L. Bachand
*Robert C. Balcer
Craig R. Barrows
James F. Baxendale
William A. Bensch
Kenneth B. Berube
*Craig F. Bradley
Brian D. Chace
*George G. Davenport, III
Charles T. Doe
*Ralph J. Eschborn, II
Arthur H. Evans, III
*Warren F. Follett
Alfred G. Freeberg
*Douglas J. George
Peter T. Groscb
Thomas M. Gwazdauskas
*James W. Haury
David G. Healey
Steven A. Hunter
Charles A. Kalauskas
Chester G. Kasmarski
Philip M. Kazemersky
*E. David Kuenzler
*David A. Kuniholm, Jr.
Gary L. Leventahl
Craig L. Mading
Alexander R. Malcolm
Robert W. Mayer
Thomas F. X. McAuliffe
Gordon J. Mears
Edward A. Mierzejewski
Douglas H. Morash
*Wayne Y. Morse
*Stephen F. Nagy
Matthew T. Neclerio
Navnit M. Panchal
*John F. Poblocki
*Daniel C. Pond
*Ralph W. Rollo
Robert J. Rose
Stephen Selinger
Joseph A. Senecal
*Barry N. Shiffrin
*John S. Simpson
*Raymond B. Stanley
Martin Surabian
John J. Szostek
John A. Taylor
Lucien J. Teig
Robert S. Templin
*B. Lee Tuttle
Michael J. Wanczyk, Jr.
Leon F. Wendelowski
*David A. Zlotek

1970
340 MEMBERS
36 Contributors 10%

Gregory W. Backstrom
Peter J. Billington
Peter G. Bladen
David R. Brown
Ralph A. Di Iorio
Dwight S. Dickerman
Andrew M. Donaldson
Paul F. Dresser
Duncan H. Gillies
Richard H. Goff
William J. Hakkinen
Donald W. Harding
Thomas D. Heinold
Paul D. Himottu
Robert C. Keenan
Roger J. Kern
Lothar W. Kleiner
James M. Lockwood
Timotby J. Mackie
Alan H. Miller
Peter R. Miner
George P. Moore
Alan J. Nizamoff
John A. Pelli
Paul A. Perron
Leonard Polizzotto
John K. Redmon
John J. Ring, Jr.
Randolph J. Sablich
E. Richard Scholz
John C. Sexton
David L. Valcore
Ross A. Willoughby
Alan P. Zabarsky
Louis W. Zitnay
Frank J. Zone, Jr.

OTHERS:

Alumni Wives Club
Anonymous
Class of 1916
Miss Louise I. Doyle
John M. Hogg
The Otto Konigslow Mfg. Co.
Washington Chapter
Worcester County Alumni Association Chapter

IMPROVEMENT LEADERS — PERCENTAGE PARTICIPATION
(From Previous Year)

CHAPTER	% IMPROVEMENT From 1969-70	KEYMAN
1. Cincinnati	39%	Stephen D. Donahue, Jr., '63
2. Western New York	22%	O. Arnold Hansen, '25
3. Cleveland	16%	Richard D. Popp, '54
4. Wilmington	9%	Harold E. DeCarli, '52
5. Pacific Northwest	7%	William M. Lloyd, II, '51
6. Northern New Jersey	7%	George A. Walker, '22 Paul W. Bayliss, '60

ANNIVERSARY CLASS GIFTS

Class of 1921 — 50th Anniversary	$36,611.74
Class of 1946 — 25th Anniversary	$8,914.07

HOMECOMING

October 16, 1971

Friday, October 15

6:00	Joint Gathering of WPI and Wesleyan alumni for a social hour and dinner at the Higgins Estate with football coaches from both colleges as speakers
8:00	J. Geils -- Concert -- Alden Memorial

Saturday, October 16

9:30-11:00	Homecoming Registration and Coffee Hour -- Baseball Field
11:00	Soccer -- WPI vs. Clark
11:30-1:30	Tailgate Picnic and Barbeque -- Baseball Field*
2:00	Football -- WPI vs. Wesleyan
After Game	Happy Hour for alumni and friends -- Higgins Estate
After Game	Rope Pull -- Institute Pond
6:00	Buffet dinners at fraternities
8:00	Al Kooper -- Concert -- Harrington Auditorium
8:00	Brass Choir -- Concert -- Higgins Estate

In case of rain, registration, coffee hour, and barbeque will be held in Morgan Hall.

Park on the baseball field for tailgate picnic.

**Buy your lunch at the barbeque or bring your own. An award for the most colorful and hospitable tailgate picnic area will be made.*

IN MEMORY

WILLIAM F. LYNCH

We note with sadness the passing on August 13 of William F. Lynch, 83, who was Director of Instrumental Music at WPI for 32 years prior to his retirement in 1966. Bill Lynch was a professional musician all his life, playing not only in local bands but also as a touring musician for several years. He retired a year ago from Walberg & Auge Co., a well known Worcester supplier to musicians.

Alumni will remember Bill Lynch as the jovial leader of the WPI band at football games and other athletic events.

THEOPHILUS BROWN, '01

Theo Brown, inventor and descendant of the first settler in Worcester, died in Princeton, Mass. in July, 1971.

He was born April 19, 1879 in Worcester. While attending Classical High School there, he rowed on the first U.S. high school crew. He entered WPI in 1897 and graduated in 1901 with a degree in mechanical engineering.

After school, he went to work with Richardson Mfg. Co. as an inventor of agricultural machinery. In 1911, he worked for John Deere Co., Moline, Ill. and retired in 1952 having received patents for 158 inventions. He served on the board of directors of Deere Co. for thirty years.

He was a member of the American Society of Mechanical Engineers, the American Society of Agricultural Engineers and had belonged to the National Safety Council. While at WPI, he was a member of Phi Gamma Delta fraternity.

Mr. Brown received numerous honors. Among them were: the first Cyrus H. McCormick Medal for outstanding service in agricultural engineering; the Robert H. Goddard Award for Outstanding Professional Achievement, and Distinguished Service Award from the National Safety Council for work in farm safety.

EVARTS G. LOOMIS, '01

Evarts G. Loomis died in March, 1971 at the age of 91.

Born in San Rafael, California December 13, 1879, he attended Newton (Mass.) High School. Entering WPI in 1897, he was graduated in 1901 with a degree in mechanical engineering.

He spent the majority of his business career as President of Evarts Loomis Co., Mechanical Engineers of Newark, New Jersey. He retired in 1955. Following graduation from WPI, he worked for Francis H. Richards, New York City, as a draftsman and then as an engineer and assistant manager for Wildman Mfg. Co., Norristown, Pa.

He was a member of the American Society of Mechanical Engineers.

He leaves his widow, Amy C. (Brown) Loomis and two sons, Evarts G., Jr. and David G.

ENOCH PERKINS, '02

Enoch Perkins, '02, died May 28, 1971, in Westhampton, Massachusetts. He was 94.

Mr. Perkins was born in Bloomfield, Vt. on Nov. 27, 1876, and attended schools in Northampton. He entered WPI in 1898.

He was employed as assistant superintendent of William A. Rogers Ltd. 16 years, and later was a paymaster at the West Boylston Co. in Easthampton. He was a member of Sigma Alpha Epsilon fraternity.

He is survived by his widow, Elizabeth (Gregory) Perkins; a daughter, Mrs. Edwin Hayes of Westhampton; three grandchildren and several nieces and nephews.

EDWARD H. GOODNOW, '05

Edward H. Goodnow, '05, passed away February 19, 1971, in Santa Barbara, California, after a year's illness. He was 87.

Born on March 12, 1883, in Worcester, Mr. Goodnow attended Classical High School. He began his studies at WPI in 1901 and graduated in 1905 with a degree in chemistry.

Mr. Goodnow was employed as a chemist at the New Hampshire State Experiment Station, Durham, N.H.; at Whitall-Tatus Glass Co., Milville, N.J.; and the Bureau of Internal Revenue, Washington, D.C.; and at the Bureau of Chemistry, Washington, D.C. He worked as chief of the St. Paul and Minneapolis stations of the Food and Drug Administration and for thirteen years was assistant chief of the Central Inspection District for the Food and Drug Administration, Chicago, Ill.

ELBERT C. ALDRICH, '06

Elbert C. Aldrich, 89, a native and benefactor of Granby, Mass., died there July 14, 1971.

He attended Granby schools and graduated from WPI with the class of 1906 with a degree in civil engineering.

He served as a city engineer in Auburn, N.Y., before returning to Granby where in 1917 he dammed up Lake Aldrich and built a generating station which supplied power to a large portion of Granby. He operated a bathing beach and roller rink in Granby, as well as owning the Winter Palace in Holyoke. The town of Granby received the lake and surrounding lands from him several years ago.

He leaves three nephews and a niece.

LOUIS H. TROTT, '08

Louis H. Trott died April 20, 1971, in Cincinnati, Ohio at the age of 85.

He was born in Worcester January 12, 1886, and went to Worcester English High. He was a WPI student from 1904 to 1908, graduating with a degree in chemistry.

He worked five years for the Murphy Varnish Co., Newark, N.J., first as a chemist and later as a chief chemist. He was a superintendent at McDougall Varnish Co.,

Montreal, Canada and also at the C. H. Parker Co., Valparaiso, Indiana. Beginning in 1923, Mr. Trott was employed by the New Jersey Zinc Co., and remained with that company for 33 years.

Mr. Trott was a member of Theta Chi fraternity, the American Chemical Society and the American Society for Testing Materials.

WALTER I. BARROWS, '09

Walter I. Barrows passed away January 24, 1971, at the age of 83.

He was born in Worcester March 25, 1887, and attended South High School. He began his studies at WPI in 1905 and graduated in 1909 with a degree in civil engineering.

Mr. Barrows held a variety of positions with the I.W. Jones and Milton Co., N.H., working up to chief engineer. He worked 11 years with the Management Engineering and Development Company, Dayton, Ohio. He was the owner of W.I. Barrows & Assoc., Engineers, in Dayton, Ohio and was a member of the American Society of Civil Engineers, the American Society of Mechanical Engineers, and Sigma Xi.

EDMUND M. FLAHERTY, '11

Edmund M. Flaherty, 82, who was at one time head of Marshall Plan efforts to revitalize Europe's chemical industry, died August 2, 1971 in Bay Shore, N.Y.

He was a native of Worcester, born Dec. 10, 1888, and attended Classical High School in that city. A chemistry major, he was a 1911 graduate of WPI and was awarded an honorary doctorate degree from the College in 1951.

Following graduation from WPI, he began work for E.I. duPont deNemours & Co., Inc., remaining with them for 35 years in executive positions in the research, manufacture and sale of automotive and industrial finishes and coated fabrics. He retired from duPont in 1946 to serve as head of the chemical division for the Marshall Plan. He later became assistant chief of the industrial division of the Economic Cooperation Administration.

He was one of a small group of duPont chemists credited with inventing Duco nitrocellulose lacquer and was issued the patent for duPont in 1927. The invention of the lacquer allowed painting and polishing of automobiles within hours instead of weeks, therefore removing one of the last barriers to mass production of cars.

He was a member of the American Chemical Society and Theta Chi fraternity.

He leaves his widow, Anne D. Flaherty; a son, John E. of Wilmington, Del.; two daughters, Mrs. Joseph L. Savage of Islip, N.Y., with whom he was visiting when stricken with a heart attack, and Mrs. William R. Leathers III of San Francisco; 15 grandchildren and six great grandchildren.

FRANK H. PLAISTED, '12

Mr. Frank H. Plaisted 81, died August 16, 1970. He was born August 15, 1890 in Worcester and was graduated from Worcester South High School in 1908, entering WPI that year. A civil engineering major, he graduated in 1912.

At the time of his retirement in 1958, he was the University of New Hampshire associate director of extension and associate professor of industrial management, a position he had held for eight years. Following graduation from WPI, he worked ten years as an office engineer for C.C.C. & St. Louis Railroad. He later was employed as a president manager of the Austin Co., Portland, Ore., remaining with that company for thirteen years. Previous to his position at the University of New Hampshire, he worked for the Multnomah Relief Commission as managing director; for the Iron Fireman Corp. as a manager for Greater New York, for the American Type Founders Inc. as a manager and director (radar) and as a consultant to the Allen Rogers Corp., Laconia, N.H.

While at WPI he was a member of Theta Chi fraternity and was a charter member of Skull. He belonged to the Rotary International and was on the YMCA Board of Directors. He was also director of the Community Chest and Town Moderator in Brooklyn, New York.

ALBERT L. BROWN, '13

Albert L. Brown died March 26, 1970 in Eustis, Florida. He was 79.

He was born in Brockton, Mass. September 2, 1890, and attended high school there. He entered WPI in 1909 and was graduated in 1913 with a degree in chemistry.

Mr. Brown worked for 28 years in the sales and pollution-control areas of the coal industry, joining Consolidation Coal Co., Appalachian Coals, Inc., and Bituminous Coal Operators' for Smoke Abatement. Mr. Brown was also employed by Worcester Gas Light Co., remaining with them for eight years. He retired in 1953.

He was a member of Skull, Sigma Xi, and Phi Sigma Kappa fraternity. He also belonged to the American Chemical Society, the American Gas Association and the Masons.

JULIAN B. GOUSE, '14

Julian B. Gouse, former president of the Massachusetts Trade Shops Schools of Everett and Boston, passed away August 5, 1971 in Newton, Mass. He was 51.

A native of Boston, he attended Boston English High School before entering WPI in 1940. He was graduated four years later with a degree in mechanical engineering.

He was the president of Ford Hill Realty Co. of Newton, and had previously been president and treasurer of the Master Tool and Electronics Corp., and treasurer of Master Electronics, both of Boston.

He was a member of Temple Israel of Boston, the National Association of Trade Technical Schools; and the Germania Lodge, A.F. & A.M., the 32 degree of the Scottish Rite, and was also a member of the Aleppo Temple, all of Boston. He was also a life member of Brandeis University and joined the American Society of Mechanical Engineers. His fraternity was Alpha Epsilon Pi.

He served as an engineering officer on a fire support ship during World War II.

He leaves his widow, Marci Tuck Gouse; two sons, Richard and Andrew, of Newton, and a sister, Mrs. Lillian Waldfogel of Swampscott.

ERNEST R. HEDSTROM, '14

Ernest R. Hedstrom died in Worcester February 25, 1971, at the age of 70.

Born in Worcester June 10, 1891, he attended Worcester English High and entered WPI in 1909. He graduated in 1914 with a degree in mechanical engineering.

He worked 35 years as an engineer with Morgan Construction Co., retiring in 1963. He had worked earlier for Builders Iron Foundry, Providence, R.I., Norton Co. and Riley Stoker Corp., both of Worcester. He served as a second lieutenant in the U.S. Army during World War I.

He was a member of the Masons, Quinsigamond Post of the American Legion, St. John's Episcopal Church, Aletheia Grotto, and North Worcester Aid Society. He also belonged to Tau Beta Pi, Sigma Xi, and the American Society of Mechanical Engineers.

GEORGE A. BARNARD, II, '15

George A. Barnard, a partner of Barnard, Sumner & Putnam Co. in Worcester, passed away in Honolulu, Hawaii, April 3, 1971. He was 77.

A Worcester native, he was born May 16, 1893, and attended Worcester English High School. In 1911 he was graduated from high school and entered WPI.

He was a division sales manager and general purchasing agent for the Graton & Knight Co., where he worked for 33 years.

He leaves his widow, Grace; a son, George A. III, and brothers Mason, John and Ruggles.

CARROLL MARTIN LAWTON, '15

Carroll M. Lawton, 79, passed away June 10, 1971.

Born Jan. 2, 1892 in Brooklyn, Conn., he attended Killingly High School, Danielson, Conn., before entering WPI in 1911.

He worked more than forty years in the Abrasive & Diamond Wheel Dept., Manhattan Rubber Division, Raynestos-Manhattan Inc., Passaic, N.J. Earlier, he had worked for Norton Co. in Worcester and N.Y.C. and the Charter Oak Motor Car

Corp. of Hartford, Conn. He had also served in the U.S. Army Medical Corps and was a registered professional engineer in Conn.

He belonged to the Society of Carbide Engineers, the Hartford Engineers Club, the Masons, and was a charter member of the Charter Oak Color Slide Association.

ULRIC J. LEBOURVEAU, '15

Ulric J. Lebourveau passed away April 26, 1971 in Somerville, New Jersey after a brief illness. He was 78.

A native of Barre, Vt., he was born May 23, 1892 and attended Spaulding High School in Barre.

Having worked 7 years for Atlas Powder Co., he was later the owner of the Somerville Hardware Store. He sold the store in 1958 after 35 years of business.

He was a member of the Valley of Trenton, Scottish Rites Masons; the First United Methodist Church; the Solomon Lodge, F. & A.M., Sigma Xi and Eta Kappa Nu.

Surviving are two sons, John W. of Needham, Mass. (WPI '44) and Willis A. of Cincinnati, Ohio; one daughter, Mrs. Ruth L. Bolton of Williamstown, Mass. and 10 grandchildren.

JOHN D. MacIVER, '16

John D. MacIver died May 17, 1971 in Northampton, Mass. He was 80.

Born in Quebec, Canada, February 12, 1891, he was graduated from Lowell High School. While at WPI he was a civil engineering major, graduating from the college in 1916.

He retired in 1961 after thirty years as an industrial safety inspector for the state of Massachusetts. He served in the U.S. Army in World War I in France in the medical corps.

He belonged to Sigma Alpha Epsilon fraternity and Skull.

Mr. MacIver is survived by his wife; a daughter, Mrs. James C. Crabree of Delmar, N.Y. and two grandchildren.

DANA F. HIGGINS, '17

Dana F. Higgins, 76, retired funeral director and furniture dealer, died March 11, 1971 in Athol, Mass., after a short illness.

Born January 30, 1895 in Boylston, he attended Athol High School before entering WPI. He was graduated from the college in 1917 with a degree in electrical engineering.

After graduation he worked briefly for Westinghouse, in Pittsburgh. He retired in 1959 after the J. F. Higgins Co. funeral home, which he operated with his brother, was sold to Donald H. Higgins and Charles W. Higgins.

He was a member of Theta Chi fraternity and Tau Beta Pi, and was a Mason.

Besides his widow he leaves a son, Dana F., Jr. of Rome, N.Y.; two daughters, Mrs. Diane Anderson, wife of Walter R. Anderson, WPI Class of 1951, of York Beach, Maine, and Mrs. Deborah Hergenrother of Kwajalein Island, Marshall Islands; his brother, H. Howard Higgins of Athol; and nine grandchildren.

JAMES A. McDONALD, '18

It has been reported to us that James A. McDonald died in July, 1970 in Cambridge at the age of 75. He was born in Worcester May 6, 1895 and was graduated from Holyoke (Mass.) High School in 1914. He entered WPI that same year, later to major in electrical engineering.

He was employed for eight years by the Flintkote Co. He served as an Ensign in the U.S. Navy and also attended Stevens Institute of Technology.

A member of Sigma Alpha Epsilon fraternity while at WPI, he also belonged to the American Legion.

FREDERIC W. GUERIN, '21

Frederic W. Guerin, 71, former Worcester district engineer for the state Department of Public Works, died April 3, 1971 in Worcester.

A Worcester native, he was a graduate of Classical High School in Worcester.

He began his studies at WPI in 1917, graduating in 1921 with a civil engineering degree.

He worked 45 years for the Massachusetts Department of Public Works, holding various engineering positions. He served as chief district engineer from the 1950's until his retirement in December, 1969.

He was considered in Nov. of 1963 by Governor Peabody for appointment to the Governor's Public Works Commission. Mr. Guerin was a member of the National Engineers Association and Lambda Chi Alpha fraternity.

He is survived by his widow, Katherine W. (Sullivan) Guerin; a sister, Mrs. Frank Murphy of Shrewsbury and several nephews.

RICHARD S. LEONARD, '21

Richard S. Leonard, 75, a retired electrical engineer, died July 22, 1971.

Born June 7, 1896 in Bellows Falls, Vt., he attended Bellows Falls High School and entered WPI in 1915. He was an electrical engineering graduate of the class of 1921 and was a member of Theta Chi fraternity.

He worked for Bell Telephone Laboratories for 40 years, retiring in 1961. A veteran of World War I, he served with the Signal Corps in France.

Active in New Jersey boy scouting, he had also been engaged in civil defense work and was a member of King Solomon Temple Lodge of Masons.

He leaves his widow, Lucretia Meigs Leonard; a son, Ralph S., of Berkeley Heights, N.J.; a brother, Col. (Army Ret.) Lawrence C., of Williamsburg, Va.; three grandchildren, and a nephew.

GRANVILLE R. WHITCOMB, '21

Granville R. Whitcomb, a forty-year employee of the New York Telephone Co. of Brooklyn, has died. Mr. Whitcomb passed away January 23, 1971 at the age of 71. Born in Fitchburg May 26, 1899, he attended Worcester Commerce High School and entered WPI in 1917.

He was a member of Sigma Alpha Epsilon fraternity.

GEORGE V. UPTON, JR., '22

George V. Upton, Jr., 70, a former duPont official, died suddenly on February 6, 1971 in Leominster, Mass.

He was born Nov. 10, 1900 in Fitchburg, Mass. and attended Fitchburg High School, graduating there in 1918. A mechanical engineering major, he entered WPI in 1918 and was graduated in 1922.

Mr. Upton was a retired personnel and purchasing agent for the E.I. duPont de Nemours & Co., Inc. of Leominster. He had been retired since 1965. He had earlier been president of the Fitchburg Horn Goods Co., a position he had held for eleven years.

He is survived by his widow, Rachel Ware Upton of Lunenburg, Mass., a daughter, Miss Judith Upton of West Hartford, Conn., a son, George V., III of Wenham; a brother, Joseph M. of Downingtown, Pa.; two sisters, Miss Dorothy Upton and Mrs. Stowers Curry, both of Washington, D.C., and a grandson.

CARL S. ROYS, '23

Dr. Carl S. Roys, 72, retired University of Massachusetts electrical engineering professor emeritus, died March 5, 1971, in his home in Leverett, Mass.

He was born July 30, 1898 in Shelburne, Mass. and attended Greenfield (Mass.) High School. He entered WPI in 1918, and, after graduation in 1923 with a degree in electrical engineering, went on to do graduate work at Union College in Schenectady, N.Y., and at the University of Wisconsin, later receiving his PhD from Purdue University.

He taught 44 years at Union College, Purdue University, Illinois Institute of Technology, Syracuse University, and the University of Massachusetts. He also was a consultant for Bell Telephone Laboratories, N.H., General Electric Co. and Continental Electric Co.

He was a former Leverett Town moderator, selectman, member of the School Committee, and a constable. He was a member of Eta Kappa Nu as well as Tau Beta Pi and Sigma Xi.

He leaves his widow, Ursula L. (Purinton) Roys, three daughters, Mrs. Earl Viliton of North Reading (Mass.), Mrs. Kenneth Woodard of Millis (Mass.), and Mrs. Thomas Morrissey of Sandwich; three sons, Arthur of Brandon, Fla., Robert of Juneau, Alaska, and Charles of Wilbraham, and a sister, Mrs. Richard Smith of Hartford, Conn., and a brother, John of Boca Raton, Fla., and 21 grandchildren.

JOHN H. SCHWARZ, '26

John H. Schwarz, a veteran of two world wars, died April 13, 1971 at the age of 71.

Born Sept. 26, 1899 in Niagara Falls, N.Y., he was graduated from high school there before entering WPI in 1922, where he majored in civil engineering. He also attended Pratt Institute.

Among the service ribbons he had received were the Victory medal (World War I), American Defense, Philippine Liberation and the Victory medal (World War II). His work experience included positions with H.S. Ferguson, M.W. Kellogg Co., Linde Air Products Co., Mead Corp., and Shredded Wheat Co.

He was a member of the American Legion, the Knights of Columbus, Rotary Club, Retired Officers Association and Theta Chi fraternity.

JAMES A. THOMPSON, JR., '26

James A. Thompson, owner and manager of Leach, Thompson and Adams, florists, died February 15, 1971 in Providence, R.I. He was 66.

A native of Worcester, he was born October 30, 1904 and attended Holden (Mass.) High School. He entered WPI in 1922, majoring in electrical engineering.

Besides being proprietor of the Florist Co., Mr. Thompson had worked previously for W.C. Bliss as a surveyor and for Worcester Consolidated St. Railroad as an assistant engineer.

He served on the Board of Selectmen in Seekonk, Mass., having acted as chairman of the board. He was also chairman of the Board of Water Commissioners, on which he was a member for many years. A member of the Seekonk Chamber of Commerce, he also belonged to the New York and Ohio Florists Associations. He was president and a director of Farmers Production Credit of Taunton, Mass.

WILLIAM J. BREEN, JR., '27

William J. Breen, who was cited in the 37th edition of *Who's Who in America,* died April 30, 1971 in Ft. Lauderdale, Fla. He was 66.

Born in Boston, September 23, 1904, he attended Winchester High School and entered WPI in 1923. He was a civil engineering major.

He was the president of William J. Breen, Inc., Ft. Lauderdale, Fla., yacht brokers. He held various executive account positions with Sherman & Marguette, Inc., N.Y.C., McCann-Erickson, Inc., N.Y.C. and Lennen & Newell, Inc., culminating in his being named senior vice president and management account supervisor for Lennen & Newell. He had been employed by N. W. Ayer & Son, Inc., of Phila., in 1929 and later by Young & Rubican, Inc., N.Y.C. He was also a partner in Breen-Fisher & Assocs.

Mr. Breen was a member and ex-president of the Southern Yacht Brokers Association. He belonged to Phi Sigma Kappa.

HARRY J. KATHMAN, '27

Word has been received of the death of Harry J. Kathman at the age of 67.

A native of Brookline, Mass., he attended Commerce High School in Worcester before entering WPI. He received his degree in civil engineering in 1927.

His most recent employment was at United Engineering Company of Philadelphia as a structural designer. Other work included previous positions with General Industries, Boiler Engineering and Supply, Bethleham Steel Co. and Phoenix Bridge Co. Mr. Kathman was a registered professional engineer in Pennsylvania.

While in attendance at WPI, Mr. Kathman became vice-president and treasurer of the student chapter of the American Society of Civil Engineers.

He leaves his widow, Gertrude Campbell Webb Kathman and two children, Winifred Anne Thompson and John C. Kathman, all of Phoenixville, Pa.; a stepson, Paul G. Webb of Pottstown, Pa.; five grandchildren and a brother, John F. Kathman of Worcester.

CLIFFORD G. ENGSTROM, '28

Clifford G. Engstrom, an engineer who worked 35 years for the firm of Buck & Buck of Hartford, Conn., passed away March 10, 1971 in West Hartford.

A life-long resident of the Hartford area, he attended Hartford High School, graduating in 1924 and entering WPI that year. He was graduated from WPI in 1929 with a degree in civil engineering.

Prior to his employment with Buck & Buck, Mr. Engstrom worked for the Metropolitan District, Hartford as an inspector and draftsman; for the Works Progress Administration; and for the Springfield Water Works, Springfield, Mass. as a transitman and inspector.

He was a member of the American Society of Civil Engineers and the Connecticut Society of Civil Engineers. He had belonged to Lambda Chi Alpha fraternity.

LESTER BRISK, '38

Lester Brisk, 55, died May 15, 1971 in Springfield, Mass. He was the owner of the Feiner Chemical Co. for 17 years.

Born Feb. 23, 1915 in Springfield, Mass., he attended Classical High School in Springfield before entering WPI in 1934.

Besides his mother, who resides in Springfield, he leaves a brother, Seymour H., of Longmeadow, Mass.

GEORGE A. LATINEN, '44

George A. Latinen, 49, died April 9, 1971 in Clearwater, Fla.

Born in Maynard, Mass., March 18, 1922, he was well-known in engineering circles for having developed several processes for work with polymers. He graduated from Clinton (Mass.) High School in 1940 and received his bachelor of science degree in chemical engineering from WPI four years later. He pursued his formal education at WPI, receiving a master of science degree from the college in 1948. He obtained a PhD degree from Princeton in 1951.

He served as an electronics officer in the Navy from 1944 to 1946, joining the research department of the Plastics Division of Monsanto Co. in 1952. In 1959 he worked his way up to become a research specialist, and in 1965 held the position of technologist, working in the Technologist program, later renamed the Engineering Fellow program.

He was a member of the American Institute of Chemical Engineers and Sigma Xi.

He leaves his widow, Mrs. Mary Latinen.

ELMER B. SEVERS, JR., '45

It was reported to us that Elmer B. Severs, Jr. passed away in the fall of 1970 at the age of 46.

Born in Philadelphia, Pa., July 31, 1924, he graduated from Lower Merion High School in 1943. He received his bachelor of science degree from WPI in 1944 and his master of science degree from Purdue in 1948, both degrees in mechanical engineering.

Beginning in 1948, he held a variety of positions with Babcock & Wilcox Co., Barberton, Ohio, working up to manager of production control. He was also a projects manager for Forty-eight Insulations Inc. Prior to joing Babcock & Wilcox, he had served three years in the U.S. Navy as a chief engineering officer.

He was a member of the Masons, the Elks, the Veterans of Foreign Wars, the

American Legion and the Young Republicans. Also he belonged to the American Society of Mechanical Engineers and the Naval Institute.

JAMES M. MULLARKEY, '48

James M. Mullarkey, assistant vice-president of Chas. T. Main, Inc., Consulting Engineers of Boston, died June 7, 1971 in Boston at the age of 45.

Born in Boston, March 9, 1926, he attended Quincy High School before entering WPI. Graduating with a bachelor of science degree from WPI in 1948, the College later awarded him the professional degree of civil engineering. He was a member of Tau Beta Pi.

Prior to joining Chas. T. Main, Inc., he was employed by Ebasco Services Inc. of New York as a principal civil engineer. A well-known hydro-electric engineer, he had participated in the design of power projects in Turkey, Brazil, Colombia, and Ecuador and in the U.S. He was a registered professional engineer in Mass., N.Y., and several other states.

Mr. Mullarkey was a fellow of the American Society of Civil Engineers, serving that association as chairman of the Power Division publications committee and as secretary of the Power Division's executive committee. He also belonged to the Boston Society of Civil Engineers and the United States Committee on Large Dams, as chairman of the Technical Activities Committee.

He leaves his wife, Mary L. Collins Mullarkey; two sons, James C. and Peter W.; a daughter, Katherine M.; a brother, William E. of Geneva, N.Y., and two sisters, Mrs. Claire Barry of Quincy, Mass. and Mrs. Helen Reynolds of Holbrook, Mass.

JOHN GOWEN, '64

John Gowen died May 27, 1971 at the age of 28.

A native of Washington, D.C., he attended Natick (Mass.) High School prior to entering WPI in 1960. He was graduated from WPI Sep. 8, 1964 with a degree in mechanical engineering and did graduate work at the University of Oregon. He was a member of Sigma Alpha Epsilon fraternity while at WPI.

Mr. Gowen had been hired by the Research Division of the United Shoe Machinery Corp., Beverly, Mass., as a programmer in their engineering department.

He is survived by his parents, Mr. and Mrs. John K. Gowen III, and a sister, Miss Mary Anne Gowen of South Natick, Mass. His maternal grandparents are Mr. and Mrs. William J. Thatcher of Weymouth and his paternal grandmother is Mrs. John K. Gowen II of Washington, D.C.

EDWARD P. FALCIONE, '71

Edward P. Falcione, 21 years old, died February 12, 1971 after his car skidded off Route 128 near Route 1 in Dedham, Mass. and burst into flames.

Born June 24, 1949, he was a native of Medford, Mass. and attended Milton High School before entering WPI in June of 1967. He was majoring in mechanical engineering.

He leaves his parents, Edward J. and Camille Salvatore Falcione and a sister, Phyllis.

YOUR CLASS AND OTHERS

1903

HENRY JAMES POTTER reports that he has completed 21 years of retirement and that on the 22nd of January he celebrated his 90th birthday. He is a resident of Mendham, New Jersey, and a former employee of the Hartford Accident & Indemnity Company.

1913

North Andover, Mass. is the location of GEORGE R. BARKER, where he is owner and operator of a farm.

1914

WINTHROP B. BROWN was chosen a Layman of the Year in 1970 by the Presbytery of South Florida, First United Presbyterian Church in the U.S.A. He has received the more recent honor of being elected moderator of the Presbytery of South Florida for 1971. He retired in 1961 from the Pittsburgh Steel Foundry, where he was Corporate secretary. . . HENRY C. WHITLOCK has retired as city engineer of Waterbury, Conn., where he has worked for 55 years. Whitlock, at 78, has had such firm knowledge and control over Waterbury's public works that Mayor Victor Mambruno said, in tribute, "I hope he is leaving a map so that we will know after he is gone where every pipe and joint is in the city since he is the only one who has that knowledge."

1915

WINFIELD S. JEWELL is very active in his "retirement" and is employed as a Real Estate agent by Maxon Brothers, Inc., of Grosse Pointe, Michigan, where he is also a resident.

1916

ARTHUR K. INGRAHAM has retired for the second time, this time retiring as an electrical and hydraulic engineering director with the Public Works Department of the U.S. Navy at Treasure Island, California. He had previously served from 1923 until 1959 in various engineering positions with the Pacific Gas and Electric Co.

CLINTON S. DARLING, of Santa Barbara, Calif., is now part-time U.S. representative for SAFAA, of Paris, France.

1920

A retired Research Chemist and former faculty member at WPI, CHARLES A. GAMMAL made the news in April of this year when he urged that a ban on salt for highway snow removal be instituted. He said, "Pollution is increasing at such a rate that it will not be too long before the country won't be fit for human habitation." His viewpoint, however, was strongly opposed by the State Department of Pulbic Works and the Massachusetts Highway Association. MR. GAMMAL is a resident of Worcester.

1922

EDWARD H. COLESWORTHY, A self-employed mechanical engineer in Sarasota, Fla., now lives at 3360 Sheffield Circle, Village Green, Sarasota 33580 . . . WILFRED H. HOWE, currently serving as chairman of the Board of Selectmen of the town of Sharon, Mass., has been elected to the Board of Directors of Morgan Memorial Goodwill Rehabilitation Centers in Sharon. With more than 50 patents, technical papers, and other publications to his credit, Howe is a Fellow of the Institute of Electric and Electronic Engineers, an honorary member of the Instrumental Society of America, and a senior member of the American Society of Mechanical Engineers.

GEORGE F. PARSONS has recently moved to Rye, New Hampshire. . . ROY G. BENNETT also moved recently and is now residing in Melrose, Massachusetts.

1923

ANDREW FIORE writes that he has retired after 42 years with L.T.V. Ling Altec Inc. as vice president of administration: he is now residing in Leisure World, Laguna Hills, Calif.

1925

JAMES I. CORNELL reports that he is employed as the Acting Assistant Director for Curriculum for the Pinellas County Board of Education in North Clearwater, Florida. He resides in St. Petersburg. . . A newspaper article in March quoted WILLIAM B. GOULD, 3rd as saying that retirement has made him "very lazy." Bill retired two years ago after putting in 30 years as an engineer in Fort Monmouth, New Jersey's laboratories.

1927

After 30 years with L.T.V. and its predecessors, CARL H. SCHWIND has retired and is enjoying long-neglected home chores, reading, travel, nature study and observation, and hiking.

1928

After 42 years of service with the Western Massachusetts Electric Company, WINSLOW C. WENTWORTH has retired. Mr. Winslow is a resident of Turners Falls, Massachusetts.

1929

We have learned that ROGER M. L. RUSSELL is residing in Luquillo, Puerto Rico, where he is Resident Executive Engineer for the Factory Insurance Association of Hartford, Connecticut. . . FRANCIS WIESMAN writes, "I am retired from teaching (I) did some programming at American Optical Company until July, '70 recession hit. Have been professional parliamentarian for ten years — still enjoy it immensely." Mr. Wiesman is a resident of Worcester.

RUSSELL C. WILEY writes that since his retirement from Pratt & Whitney Aircraft he is busier than ever.

1931

JAY M. HARPELL, chief electrical engineer for the firm of Daniel, Mann, Johnson, & Mendenhall, is now stationed in Saigon, Vietnam.

EDWARD S. "TED" COE, JR. reports that he is a resident of Rochester, New York and has been retired there for six years. He says he is newly married for 1½ years and he also owns and operates his own single engine plane. . . We have learned that THEODORE L. WANSTALL has retired from the General Electric Company and is now residing in Bethel, Vermont.

1932

THEODORE H. BERARD is Guidance Director at the 800 student Athol-Royalston (Mass.) Regional High School. . . CURTIS M. WHITE is residing in Crestwood, Illinois and is working in Chicago, Illinois where he is with General Office Utilities.

1933

DR. RAYMOND B. CRAWFORD, who retired from the National Aniline & Chemical Company of Buffalo, New York, is employed by the Central School District of West Seneca, New York as a science teacher. Dr. Crawford is a resident of Hamburg, New York. . . The President of Mills Pharmaceuticals, Inc. & Glencoe Research, Inc. of St. Louis, Missouri, is DR. HERMAN W. DORN. . . Worcester County National Bank has named ARAM KALENIAN to its advisory board for its Westboro Branch. Aram has been President of the Vee Arc Corporation of Westboro, since 1947. . . H. EDWARD PERKINS, JR., writes: "I retired from Sikorsky Aircraft Division of United Aircraft on February 12, 1971, after 38 years in industry." After taking a few weeks

of vacation in the sunny south he has taken up residence in Plymouth, Vermont and says, "We shall keep busy managing and selling portions of our Vermont land holdings during most of the year, and travelling in warmer climes during the winter months."

JAMES B. RAFTER is now District manager for sales (New York) of Armco Steel Corp. . . GORDON R. "BUCK" WHITTUM has been appointed district manager of engineering and planning for U.S. Steel's USS Realty Development Division. He will have prime responsibility for negotiations with prospective tenants interested in the industrial park on USS property in Worcester.

1934

FREDERICK A. BOWERMAN has been elected a director of Narragansett Electric Co. In addition, he is president of Bowerman Bros. Inc. and a director of Almacs, Inc. and a trustee of Citizens Savings Bank of Providence, R.I.

KENNETH E. BENNETT reports that his oldest daughter is a student at Drew University in Madison, New Jersey, and that his youngest daughter is a senior at Fairhaven High School, Fairhaven, Massachusetts. Kenneth is employed by the Revere Copper & Brass Company, Inc., of New Bedford, Mass. . . WARREN R. BURNS is director of Marketing for the Florida Machine Products Division of Consolidated Foods Corporation in St. Petersburg, Florida. He is a resident of St. Petersburg Beach, Florida. . . Gov. Thomas J. Meskill of Connecticut named H. RAYMOND SJOSTEDT as Director of Civil Defense for the State of Connecticut in March. He is a former executive of the Watertown Mfg. Company, Watertown, Connecticut. . . In April, 1971 CHARLES W. McELROY was elected Vice President Sales of Safety Electrical Equipment Corporation of New Haven, Connecticut. The company is heavily involved with Mass Transit Contracts throughout the world. Charlie is a resident of Hamden, Connecticut. . . RICHARD W. RHODES retired from the E. I. DuPont deNemours & Company Inc. on August 31, 1970.

1935

Fluor Ocean Services, Inc. of Santa Barbara, California, employs ALFRED CANTOR as a Project Manager. . . Royal-Globe Insurance Company, Ltd., of New York, N.Y., reports that WILLIAM E. GRUBERT retired on February 15th of this year. He had been a senior executive of the company for the past 25 years and has recently assumed the responsibilities as an Insurance Consultant. . . VERNER R. OLSON is Production Superintendent at the Toledo Plant of E. I. DuPont de Nemours & Company, Inc. He is a resident of Sylvania, Ohio. . . Fiske & Gay, Inc. of Orlando, Florida, employs S. LINCOLN PRICE as a mechanical engineer. Mr. Price is a resident of Deltona, Florida.

JOSEPH GLASSER has been elected a vice president of Raytheon Company. He had been manager of the firm's largest plant since 1967. Glasser has been active in civic affairs, and is a director of the Greater Lawrence (Mass.) Chamber of Commerce, the Greater Lawrence United Fund, the Greater Lawrence Chapter of the American Red Cross, and many other organizations.

1936

C. JAMES ETHIER is a resident of Dandridge, Tennessee, where he is President of Bush Bros. & Company. . . ARTHUR D. TRIPP, JR., a past president of the WPI Alumni Association, has incorporated a counseling service in the area of finance, insurance and investments under the name of ARTHUR D. TRIPP, JR. & ASSOCIATES, INC. with offices in Pittsburgh, Pennsylvania. Art is also Secretary-Treasurer of District 730 of Rotary International and is President of the Pittsburgh Chapter of WPI Alumni Association . . JOHN H. WYMAN is a resident of Middletown, New Jersey, and a Sales Engineer with Durakool, Inc., of Elkhart, Indiana. . . JACOB A. SACKS reports that he retired from the Navy Department in July, 1970 and he is currently doing part time consulting work.

1937

JOHN R. CASEY reports that he is retired after serving as a Regional Vice President for the General Electric Company. John now makes his home in Old Saybrook, Connecticut.

EDWARD W. OSBORN retired from the Panama Canal Co. on May 29, after 33 years, 10 months, and 3 days of service. He will be living in Dudley, Mass. . . JAMES B. PATCH writes that his son James Jr. will be a senior at Ohio Wesleyan next year, majoring in economics. His son William will be entering the pre-law program at Columbia U.

1938

THEODORE C. ANDREOPOULOS is now president of Home Tech Products in Wayland, Mass. . . DR. GILBERT G. ASHWELL is chief of the Laboratory of Biochemistry and Cellular Metabolism, National Institute of Arthritis and Metabolic Diseases, at the National Institutes of Health, Bethesda, Md. He is a member of the editorial board of three professional journals. . . PETER P. KOLISS is a department head in the Telephone Loop Transmission Division of Bell Telephone Laboratories. . . ROBERT L. SOMERVILLE is an independent consulting engineer in Neshanic, N.J. .

ERNEST E. GUSTAFSON is employed as a Branch Manager in the New Jersey Office of the Heat Transfer Division of American Standard, Inc. . . IBM Corporation employs PHILIP K. HATHAWAY as a Sr. Customer Engineer in Providence, Rhode Island. He formerly held the same position in the Concord, New Hampshire offices of IBM. Phil resides in Sudbury, Massachusetts. . . A. GEORGE MALLIS, President and Chief Engineer of Mallis Associates, Inc. of Springfield, Massachusetts, an architectural-engineering firm has been reappointed by Governor Francis Sargent of Massachusetts, to the Board of Registration of Professional Engineers and of Land Surveyors. . . MAURICE PRESSMAN was cited in February for "Special Act and Service" by the U.S. Army Mobility Equipment Research and Development Center, Fort Belvoir, Virginia, for authoring an article concerning efforts to reuse waste water. Mr. Pressman has been employed at the Center since 1958 and he is a resident of Arlington, Virginia. . . FRED E. WILEY is a popular artist in Kennebunkport, Maine where he makes his home. . . DONALD B. CLARK is a Staff Engineer with the Caterpillar Tractor Company in Mossville, Illinois and is a resident of Dunlap, Illinois. . . CHARLES C. BONIN, president of Chemico, holds an engineering license in every state of the union as well as the District of Columbia, Puerto Rico, and the Canal Zone.

1939

JAMES L. BARTLETT, JR. is President of Hydranautics in Goleta, California and he is a resident of Santa Ynez, California. . . The Microwave and Power Tube Division of the Raytheon Company employs EDWARD C. DENCH as a staff consultant at their Waltham, Massachusetts operation. Mr. Dench has been with Raytheon for 24 years, and holds more than sixty patents on microwave tubes and in associated fields. He is a resident of Annisquam, Massachusetts. . . HAROLD E. WHITE continues to be employed by the Norton Company in Worcester, and is presently Director of Manufacturing in the Abrasive Materials Division. . . RICHARD B. WILSON reports that he is currently in the process of organizing a consulting engineering service on the west coast.

1940

EDWARD E. J. HAFEY is manager of the San Leandro, Calif., branch of the Farr Co.

DONALD S. CHATFIELD is currently a resident of Pemaquid Harbor, Maine, where he is employed by George H. Brittain & Sons, Inc. . . ROBERT H. GIBBS is President of Video Display Devices, Inc. of Canton, Massachusetts. Bob is a resident of Medfield. . . ROBERT E. HIGGS, immediate past President of the WPI Alumni Association, has joined the Joy Manufacturing Company in Pittsburgh, Pennsylvania as Director of Data Processing. Bob is residing in Upper St. Clair, Pennsylvania. . . NOEL R. MALEADY reports that he has just taken retirement from the General Electric Company after 30 years of service. He has held major R&D management positions at G. E. locations throughout the country. He says he will now devote more time to interests in real estate, church music and hobbies. Three Maleady children are married, a fourth has completed her third year at the University of Dayton, and the youngest is in the second grade. Noel is a resident of Clearwater, Florida.

1941

ARTHUR J. JACKSON is located in Southington, Connecticut, where he is executive vice president and general manager of The Peck, Stow & Wilcox Co., Division of Veeder Industries, Inc. Art joined the company in February, 1970 after serving for many years with the Whitlock Manufacturing Company of West Hartford, Connecticut. . . Brig. Gen. HARVEY W. EDDY, Air Force Systems Command Deputy Chief of Staff for Personnel, has retired from the U.S. Air Force after 28 years of active military duty. Gen. Eddy was presented the Air Force Distinguished Service Medal and was cited for exceptionally meritorious service. . . as commander, Office of Aerospace Research. . . and as Deputy Chief of Staff for Personnel, Headquarters Air Force Systems Command, at retirement ceremonies at Andrews AFB, Maryland. . . STANLEY S. RIBB has been named president of the Blackstone Valley Electric Company of Lincoln, Rhode Island. He was formerly vice president and general manager of that concern. . .

HILLIARD W. PAIGE has been elected president and director of General Dynamics Corporation in St. Louis, Mo. In announcing the action, the chairman and chief executive officer said, "Hilliard Paige will add a new and unique dimension of leadership to our top management team. He brings to General Dynamics a wealth of experience, technical and managerial, after serving many years in progressively more responsible positions with a very fine and successful company. Paige, who has been senior vice president, corporate executive staff, at General Electric, is a member of the National Academy of Engineering and the Navy League of the United States, and is a fellow of the American Institute of Aeronautics and Astronautics. He received an honorary Doctor of Engineering degree from WPI in 1962. Paige was active in the Cincinnati chapter of the Alumni Association as president and treasurer for several years, and he has worked on the Alumni Fund and Techni-Forum in various capacities.

FRANK R. LINDBERG has three — count 'em, three! — children entering college this fall. Twins John and Jan, both 17, and brother Bob, 18, all entered the University of Dayton in September. Col. Lindberg (USAF, ret.) is a federal civil service engineer at the Technical Management and Operations Office, Aeronautical Systems Division (AFSC), Wright-Patterson AFB, Ohio.

1942

JOHN H. QUINN, JR., has moved to a new home in Laguna Niguel, Calif. He is a chief project engineer on the Thor/Delta program at McDonnell-Douglas.

ROGER E. COREY, a staff engineer with the New England Tel. & Tel. Co. in Boston, has been elected vice director of the New England Division of the American Radio Relay League, Inc., a national organization of amateur radio operators. Roger is a resident of Westwood, Massachusetts. . . The Electrolux Division of Consolidated Foods employs GORDON H. RAYMOND in Old Greenwich, Connecticut as manager of engineering and quality control. He is a resident of Southington, Conn. LEONARD I. SMITH is a Senior Research Engineer with the Norton Company in Worcester. . . American Optical of Southbridge, Massachusetts has announced that ERIC W. ESSEN has been appointed planning and inventory control manager for American Optical Safety Products Division. Prior to joining A.O. Mr. Essen was Director of Product Planning & Control Manager for L.G. Balfour Company, Attleboro, Massachusetts. . . ROBERT E. YAEGER has been appointed Director of the Analog Exchange Laboratory at Bell Telephone Laboratories in North Andover, Massachusetts. Mr. Yaeger joined Bell Labs in 1942 and since 1965 has been Head of the Data and Digital Systems Department at Bell Labs. in North Andover.

1943

FRANK SZEL is a mechanical engineer with HWH & Associates, Consulting Engineers, in Cleveland.

JOSEPH M. JOLDA, dean of the evening division of Worcester Junior College, has been chosen for inclusion among Outstanding Educators of America. Joe is a resident of Webster, Mass. . . BEHRENDS MESSER, JR. is Manager-Marketing Engineering with the Mobil Research and Development Corporation of Princeton, New Jersey. . . Forest D. Snell, Inc. of Florham Park, New Jersey employs JAMES H. PARLIMAN as Associate Research Director. Jim is a resident of Madison, New Jersey.

1944

Springfield, Massachusetts is the location of JOHN R. FLEMING where he is a General Foreman with Rex Chainbelt, Inc., and a resident of Longmeadow. . . Another member of the class who is employed in the Rex organization is ALFRED F. LARKIN, JR. He was recently elected Executive Vice President of Rex International, Inc. and was formerly President of the Conveyor and Power Transmission Division of Rex Chainbelt, Inc. He is a resident of Mequon, Wisconsin, and has been employed by the Rex organization since his graduation from WPI. . . IBM Corporation employs ALLAN R. MANDELIN in Houston, Texas, as an Advisory Programmer. . . JESSE R. WATT is a resident of Annapolis, Maryland, and is employed by the National Highway Traffic Administration in Washington as a Physical Scientist.

DR. DANIEL KOVAL has been appointed chairman of the Mathematics Department at Pacific Union College, Angwin, Calif.

1945

WILLIAM P. DENSMORE has been appointed vice president and general manager, Grinding Wheel Division, of Norton

Company. With Norton since 1946, Densmore is active in civic and educational affairs and in 1970 was appointed to the Massachusetts Board of Education. . . ANSON C. FYLER is chairman of the board at Arrow-Hart, Inc. . . GEORGE W. GREGORY has been appointed to the Commission on Services and Expenditures in Rhode Island. Gregory is assistant research and development manager at Electric

Boat Division of General Dynamics... WILLIAM C. HOWARD, divisional vice president of sales for Norton Company, graduated in August from the Advanced Management Program of the Harvard University Graduate School of Business Administration. The 13-week course was covered in two summers...

... GEORGE J. KENNEDY has been named special executive to the Chairman of Emerson Electric Co... ROGER N. PERRY, JR., Director of public relations at WPI, was awarded the Silver Anvil, the highest accolade of the Public Relations Society of America, for outstanding achievement in "special events" public relations for his coverage of WPI's participation in the 1970 Clean Air Car Race... ROBERT E. SCOTT is now chairman and managing director of FM Insurance Co., Ltd., in London, England... DR. MITCHELL J. TENEROWICZ has been certified as a specialist in the practice of family medicine... ROBERT L. BALLARD is vice president-engineering for the controls division of Singer Co., in Melrose Park, Ill.

Standard Oil Company (Kentucky) employs JOHN B. McMASTER in Pascagoula, Mississippi as Manager of Process Engineering. John was formerly with Standard Oil Company of California... Ohio is the location of CHARLES C. SHATTUCK who is a resident of N. Madison and Production Manager for the Industrial Control Division of Hubbell in Madison.

1946

The President of Benny's Inc. of Esmond, Rhode Island is MALCOLM C. BROMBERG... ALVIN Y. BROVERMAN is a Research Engineer with Kuhlman Electric Corporation of Crystal Springs, Mississippi and a resident of Jackson, Mississippi.

REV. PRESCOTT E. GROUT has been appointed the new minister of the Moosup United Methodist Church, Moosup, Conn. Grout is also assistant professor of philosophy at Nichols College... DELBERT E. WALTON is a self-employed sales engineer in London, England.

1946B

JOHN LEE is teaching mathematics at Plymouth-Carver High School, Plymouth, Mass.

1947

LEO W. F. GEARY is a resident of North Stonington, Connecticut and is employed by Technirite Electronics, Division of Gulton Industries as Chief Engineer.

PAUL D. O'DONNELL, with Westinghouse Electric in Pittsburgh, has just completed a one-year term as national president of the American Institute of Industrial Engineers. He was listed in the 1970 publication of Engineers of Distinction.

1948

GORDON E. HALL is now chairman of the math department at St. Andrews School in Barrington, R.I... Prentice-Hall has just published *Fundamentals of Electronic Circuits,* by ARTHUR L. PIKE. He had worked on the textbook for seven years... CLARK L. POLAND has been named vice president for operations development of Consumer and Service Industries, American Can Company.

LYNWOOD W. LENTELL is employed by the Division of Highways in the State of California and he is a resident of Fresno... CLARK L. POLAND of New Canaan, Connecticut has been named vice president for operations development of Consumer and Service Industries, American Can Company. Clark has been group vice president in manufacturing and distribution at Howard Johnson Company for the past two years and was previously at General Foods Corporation for 16 years... HERBERT R. CAHOON, JR. is self-employed as a construction engineer in Centerville, Massachusetts... ROBERT E. HUBLEY reports that he is now Assistant Vice President-Intrastate Regulatory Matters for Western Union Telegraph Company in New York City. Bob is a resident of Hawthorne, New Jersey... ALTON S. KELSEY, JR. is extremely busy these days. He is a staff assistant in Structural Mechanics with the Grumman Corporation of Bethpage, L.I. and is also president of Rel-Co Publication Corporation of Plainview, New York. He is a resident of Williston, New York.

1949

DEAN P. AMIDON is chief district engineer for the Massachusetts Department of Public Works in Lenox, Mass., and he was recently appointed to the DPW's Environmental Action Committee... PHILIP G. BUFFINGTON, vice president of State Farm Fire and Casualty Company, has been re-elected chairman of the executive committee of the National Flood Insurers Association... HOMER E. MacNUTT, JR. is manager of manufacturing for Morgan Construction Co. of Worcester. He has held the position since 1965 and before that was vice president of Worcester Valve Co. for 11 years... JOHN C. O'TOOLE has been appointed by Massachusetts Governor Sargent to a Special Commission to study pollution control of the Connecticut River as it applies to the State. John is chief engineer for Worcester County and a resident of Clinton... IBM Corporation employs MALCOLM A. SANBORN as an Advisory Engineer at their East Fishkill, N.Y. operation... ALFRED STROGOFF reports that he left his position as Group Executive and President of the Education Group of Litton Industries, Inc. in September of 1970 and that he is now employed as executive vice president of Sun Chemical Corporation in New York City.

THOMAS J. COONAN III is located in Illinois where he is a general marketing representative in the Plastics Department for E. I. duPont deNemours & Company, Inc. He is a resident of Northbrook... JOHN R. HUNTER has been promoted to the position of Engineering Director at the Electric Boat Division of General Dynamics Corporation in Groton, Connecticut... ROBERT E. MILLER, JR. is Transmission and Distribution Superintendent at Connecticut Light and Power Company of Hartford, Connecticut and is a resident of Southington, Connecticut... JOHN A. SNYDER is with the Union Carbide Corporation Plastics Products Division in New York City and is Market Manager of Wire and Cable Materials... We have just learned that SMIL RUHMAN, now at the Weizmann Institute of Science in Israel, was awarded the Rothschild Prize last year for his work on the design and construction of the "Golem" computer. The Rothschild Prize is regarded in Israel as equivalent to a Nobel Prize.

ROBERT W. COOK is branch manager at Gould Inc., Brush Division... RAYMOND J. REMILLARD is now with Teledyne Semiconductor in Mountain View, Calif.

1950

ROBERT B. ALLEN has been appointed Director of engineering at New Hampshire Ball Bearing Co... WALTER R. ANDERSON is president of Leisure-Rama, Inc., in Dover, N.H... CARL E. JOHANSSON is campaign manager for James Haviland II, Republican candidate for the Connecticut legislature. Haviland cited Johansson's background and knowledge of problem areas in choosing him... KURT A. SCHNEIDER writes that since last November he has been assigned by Sikorsky Aircraft to Siebel in Donauworth, West Germany, during the co-production by the two firms of the CH 53G helicopter. He and his family have enjoyed living in the historic city of Augsburg, located in the scenic region of Bavaria.

STANLEY FRIEDMAN is President of Spaulding Fibre Company and a Group Vice President of Monogram Industries, Inc. of Tonawanda, New York. He is a resident of Williamsville, New York... FRANK W. PEASE, formerly with American Cyanamid

Company is now with Stauffer Chemical Company as Manager of Purchasing for their Corporate Engineering Department located in Dobbs Ferry, New York... ANDRE JEAN TASSO reports that he is residing in Montreal, Quebec, Canada and is self employed as a Consultant in the fields of Information Engineering and Communications.

1951

LOUIS G. DELSIGNORE is a Program Development Engineer with the U.S. Air Force at Pease AFB, New Hampshire and a resident of Dover, New Hampshire... WALTER B. DENNEN, JR. has been named Manager, News and Information for RCA Solid State Division with headquarters in Somerville, New Jersey. Walter is also Chairman of the WPI Alumni Association's Journal and Publications Committee... DONALD A. KNOWLTON of Rockport, Massachusetts has been appointed president of Sprague Industries, Inc., in Boston. Sprague is a Boston based Real Estate Development and Construction Company... DEWEY R. LUND is New England District Sales Manager of Duriron Co., Inc. with headquarters in Needham, Massachusetts. He is a resident of Sudbury, Massachusetts. WALTER R. ANDERSON is president of Leisure-Rama, Inc. of Dover, New Hampshire and is a resident of York Beach, Maine.

1952

BRUCE S. CAMPBELL is employed in Mt. Storm, West Virginia by Stone & Webster Engineering Corporation as an Assistant Superintendent of Construction. He is a resident of Oakland, Maryland... Motorola Inc. has appointed RICHARD C. GILLETTE Manager of Special Systems for Motorola's Applied Systems Unit in Washington, D.C... ROLAND R. ST. LOUIS is located in Groton, Connecticut where he is employed by Charles Pfizer & Company as Senior Supervisor of Chemical Products... We have learned that F. PATTERSON SMITH is Supervisory Engineer for Narco Scientific, Inc. of Fort Washington, Pennsylvania. He is a resident of Dresher, Pennsylvania.

Married — GORDON C. WILLARD to Miss Alice Corbley Kern, of Richmond, Virginia, on February 20, 1971. GORDON is Director of International Procurement for the Polaroid Corporation in Waltham, Mass. and the couple is residing in Waltham.

1953

DR. ARNOLD ALLENTUCH is a Professor of Mechanical Engineering at Newark College of Engineering in Newark, New Jersey. He resides in Huntington, New York... WILLIAM M. WALSH has joined Tyrol & Wethey Company, Inc., of Glastonbury, Connecticut. The Company is involved in building and development. Prior to joining the Corporation he was with United Aircraft Corporation for fifteen years, most recently as Supervisor of Professional and Technical Recruitment for the Pratt & Whitney Aircraft Division... Kelly Springfield Tire Company has appointed THEODORE C. FRITZ JR. to the position of Section Manager Tire Design. Ted is located in Cumberland, Maryland.

1954

DUDLEY REDDEN is presently vice president of Property Line Surveys and a member of the board of directors of Schofield Brothers, Inc., Land Surveyors and Civil Engineers of Framingham, Massachusetts... RICHARD H. WHEELOCK is Vice President of Marketing for the Elgar Corporation, San Diego, California... New York Telephone Company employs ROY H. WISE as a Special Representative in their Sales Department. Roy is a resident of Denville, New Jersey. DR. RICHARD E. GILBERT is at the University of Nebraska in Lincoln where he is a professor of Chemical Engineering... GILBERT K. NERSESIAN is with the Army Corps of Engineers in New York City where he is Chief of the Beach Erosion & Hurricane Section.

1955

HENRY F. SPADONI, JR. is a resident of West Springfield, Massachusetts and is President of Customer Savings Corporation in West Springfield... Army Lt. Col DEAN M. CARLSON is located at Ft. Holabird, Maryland where he is Director, Military Intelligence Presentation Team... Sanders Associates Inc. of Nashua, New Hampshire employs WILFRID G. DUDEVOIR as a Senior Engineer.

1956

GUY W. NICHOLS, JR., SIM has been promoted to President of the New England Electric System. Guy is a resident of Needham Heights, Mass... JOSEPH F. PAPARELLA is assistant secretary of The Foxboro Company and manager of its corporate legal department. He joined Foxboro in 1963 and is a resident of Holliston... ROBERT C. SKELTON recently received a Masters Degree from George Washington University and is currently in the U.S. Army, stationed in Stuttgart, Germany... Norton Company employs ROY F. STONE in Worcester as a Data Processing Consultant.

1957

RICHARD R. ASHBAUGH is a Project Engineer with AURA, Inc. of Tucson, Arizona... DAVID W. HOSKINSON, chief mechanical engineer of the United Illuminating Co., of New Haven, Connecticut has been appointed chairman of the conservation project for the Quinipiac Council, Boy Scouts of America... Vulcan Materials Company of Baton Rouge, La. employs JOHN J. KELLY, JR. as their Production Superintendent... ALBERT G. LANGILL reports that he is self employed and is a resident of Oxford, Maine... Shell Oil Company employs ARTHUR R. LAROCQUE as a District Manager in Southfield, Michigan and Art is a resident of Troy, Michigan... THEODORE F. ROE, MS is an Associate Electrical Engineer at Cornell Aeronautical Labs, Inc. in Buffalo, New York... Vice President and General Manager of the Metallurgical Products Division of the Bundy Corporation in Warren, Michigan is RICHARD M. SILVEN... JAMES R. CLARKE III is a Project Engineer with Carus Chemical Company, Inc. in LaSalle, Illinois.

1958

PHILIP M. FRENCH, JR. is a Chief Product Engineer in the Avionics Lab of the U.S. Army's Electronics Command at Fort Monmouth, New Jersey... New England Telephone Company employs THAYER A. FRENCH as a Commercial Staff Supervisor. He is a resident of Merrimack, New Hampshire... Another member of the Class who is located at Fort Monmouth is DR. LARRY DWORKIN who is an Electrical Engineer in the Communications-Automatic Data Processing Laboratory and who was recently awarded a patent for "Pulse Code Modulation Terminal with Improved Synchronizing Circuitry."... West Penn Power Company has announced that DONALD B. HAYWARD has been named engineering supervisor of their Lincoln Division. Don is a resident of Greensburg, Pennsylvania... HARVEY A. BERGER is a Marketing Manager in Foster City, California.

1959

DAVID L. BACKLIN of Shelburne Falls, Massachusetts has been appointed senior supervisor for secondary education for the Worcester regional office of the Massachusetts State Department of Education. Dave was formerly a teacher and adminstrator at Mohawk Regional School in Shelburne Falls... RICHARD N. GUSTAFSON has been promoted to senior engineer manager at IBM's Systems Development Division's Poughkeepsie (New York) Laboratory. He has been employed by IBM since has graduation from WPI... A recent recipient of a Master of Engineering degree from Penn. State University is WILLIAM U. PURSELL, JR. Bill is a resident of Asheville, North Carolina where he is employed by SKF Industries, Inc. as an engineering manager... ROBERT F. STRACHAN is an Underwriting Manager for Kemper Insurance Company in New York City and is a

resident of Old Greenwich, Connecticut... GEZA C. ZIEGLER is a resident of Stamford, Connecticut where he is employed as a senior electrical engineer by CBS Laboratories.

1960

GEORGE H. HETLEY, JR., MS is a Principle Development Engineer for Honeywell Inc. at their Radiation Center in Lexington, Massachusetts... SANG KI LEE is now self-employed as a Counsellor at Law and is located in New York City. Sang is President of the Northern New Jersey Chapter of the WPI Alumni Association... STEPHEN LEVY is a physicist at U.S. Army's Electronics Lab at Fort Monmouth, New Jersey. Steve is also Chairman of the Deal Lake (New Jersey) Research Committee of Citizens Against Water Pollution. Steve is a resident of Asbury Park, New Jersey... BRUCE E. SCHOPPE, who received a MBA degree from Western New England College in 1970, is Manufacturing Superintendent at Monsanto Company in Springfield, Mass. Bruce is a resident of Wilbraham, Massachusetts... RCA employs BERNARD J. SEASTROM as an Engineer at their Computer Systems Center in Marlborough, Massachusetts... A Senior Electrical Engineer for Raytheon Company is H. DAVID SUTTON. Dave is a resident of Newington, New Jersey... An Assistant Vice President of Bankers Trust International, Ltd. of London, England is DAVID J. WELCH... SI M. KIM is a Design Section Engineer in the Solid State Division of the RCA Corporation in Somerville, New Jersey... Hooker Chemical Corporation of Burlington, New Jersey employs ALEXANDER J. KOWALEWSKI as a Process Engineer... Army Maj. LEONARD S. STRZELECKI is located in Long Beach, California where he is a Senior Advisor with the Long Beach Army Reserve.

1961

DR. NORMAN F. BOLYEA is a member of the Engineering Faculty of RPI in Troy, New York and he also serves as an adjunct professor at Union College in Schenectady... BRADLEY E. HOSMER is employed by Marketing Action Group, Inc. of Fairfield, Connecticut. Brad is a resident of Washington Depot, Connecticut and serves the WPI Alumni Association as one of its Vice Presidents... RAYMOND P. REC is a Technical Staff Engineer at the Newport News Shipbuilding Division of the Tenneco Corporation in Newport News, Virginia... ROBERT F. SCHUESSLER is in Los Angeles, California where he is a resident manager for the Fortifiber Corporation. Bob is a resident of Lakewood, California... EDWARD R. DESPLAINES is located in Stroudsburg, Pennsylvania where he is Assistant to the Chief Engineer of International Boiler Works... DR. GORDON M. PARKER is a Senior Research Associate with PPG Industries of Springdale, Pennsylvania... KENNETH L. TEBO is a Systems Project Engineer for Hobbs Manufacturing Company in Worcester... RIMAS A. ZINAS writes: "I am still employed at Homer Research Labs. of Bethlehem Steel Corporation, Bethlehem, Pennsylvania. Recently, I was promoted to Supervisor, Control Computer Applications Group. The family now consists of my wife, Natalie, and two sturdy offspring, Audrey, 5½ and Vincent 4.

1962

Married: BRADFORD J. BOOKER to Miss Ellen Elizabeth Risley of Fairfield, Connecticut on February 27, 1971. Brad is an Engineer with Hamilton Standard, a division of United Aircraft Corporation, in Windsor Locks, Connecticut. The couple is residing in Windsor Locks.

Born: Mr. and Mrs. GEORGE H. FORSBERG, a son on October 4, 1970. The Forsbergs reside in Pensacola, Florida where George is a Senior Engineer in Process Development with the Monsanto Company.

JOEL N. FREEDMAN recently received a MBA degree from Boston University. Joel is a member of the Technical Staff of the Mitre Corporation of Bedford, Massachusetts and is residing in Waltham... The Business Systems Markets Division of Eastman Kodak Company recently announced that they have appointed KENNETH J. LaLIBERTE to a position as a Regional Photographic Specialist serving Kodak customers in Cleveland and Cincinnati, Ohio, Detroit and Pittsburgh. Ken has been with Kodak since 1964... DR. JOHN E. LUKENS is self-employed as a consultant in Jamestown, Rhode Island... BERNARD J. MEISTER is a Research Engineer with the Dow Chemical Company in Midland, Michigan... Friendly Ice Cream Corporation of North Wilbraham, Massachusetts employs BRYCE A. NORWOOD as a planning engineer. He is a resident of Hampden... ROBERT P. WILDER has been promoted to Marketing Manager of the Data Processing Division of the IBM Corporation in Portland, Maine. Bob was formerly with IBM in Washington, D.C. and has now moved to Cape Elizabeth, Maine.

ROBERT J. BAGDIS is an Electrical Engineer with the Norton Company of Worcester... RONALD C. GAGNE is Systems Engineer with the General Electric Company in Binghamton, New York and he resides in Vestal, New York... Wiltek Inc. of Wilton, Connecticut, a manufacturer of data communications equipment, has promoted F. SPENCER POOLEY, JR. to the position of vice president, Research and Development. Mr. Pooley joined Wiltek two years ago and before that was a member of the Technical Staff of Bell Telephone Labs at Whippany, New Jersey.

1963

Married: CHARLES M. BECK II to Miss Charlotte A. Hastings of Topeka, Kansas on September 7, 1968. Charlie reports that he is an analytical chemist with the Department of Water Resources of the State of Maryland and that he resides in Annapolis, Maryland. The couple has one son John Charles born on October 6, 1969... ROBERT S. MAGNANT to Miss Rosemary Sullivan of Lowell, Massachusetts on January 2, 1971. The couple is residing in Teheran, Iran where Mr. Magnant is on assignment as Senior Engineer for the United States Army STRATCOM Field Office.

Born: Mr. and Mrs. JOHN H. GEFFKEN, their first child, a daughter on October 19, 1970. John is a Project Engineer in the Materials Handling Systems Group of the Westinghouse Electrical Corporation in Buffalo. He is President of the Niagara Peninsula Chapter of the Alumni Association and the couple resides in Williamsville, New York... DR. and Mrs. HARRY A. HOYEN, JR., a son, Andrew Thomas, on November 5, 1970. Harry is not only a doctor of Engineering but also a "medical" doctor as he delivered the baby at home. Aside from delivering babies, Harry is a Senior Research Scientist with the Eastman Kodak Company in Rochester, New York.

THOMAS M. DONEGAN is Financial Analyst with Trans World Airlines, Inc. and is located in New York City... Corning Glass Works has announced that RICHARD A. GARVAIS has been appointed Plant Manufacturing Engineer at Corning's Greenville, Ohio Plant. Rick joined Corning in 1967 as a Process Engineer and since 1968 has been Supervisor of Process Engineering in Corning, New York... ALLEN H. HOFFMAN, who is an Assistant Professor of Mechanical Engineering at WPI, received his PhD from the University of Colorado on December 21, 1970. Al also continues to be active athletically and was a participant in the 1971 running of the Boston Marathon... TIMOTHY M. SHEA is a planning Engineer with Westinghouse Electric International, a Division of Westinghouse Electric Corporation of New York City.

DR. KENNETH C. BENTON is a Group Leader with CPC International, Inc., of Argo, Illinois... PETER A. BIZZIGOTTI is an Assistant Bridge Engineer with the State of California, Division of Highways and is presently residing in Del Mar, California... MARCEL H. CLAVIEN is Sales Manager for Taft Electrosystems Inc., Metuchen, New Jersey... JOSEPH R. deBEAUMONT is with the IBM Corporation in San Jose, Californie as a Senior Associate Engineer... Phoenix, Arizona is the location of

CHARLES D. EALAND who is a Flight Instructor with Sawyer Aviation... DR. DANIEL J. PENDER is now located in Gardner, Massachusetts and is associated with Heywood Memorial Hospital there... ALAN E. SCHERER reports that he was recently assigned as the Reactor Engineering Project Engineer for the Fort Calhoun Nuclear Power Plant in Omaha, Nebraska. He is employed by Combustion Engineering Inc. of Windsor, Connecticut.

1964

DR. BRUCE S. MACCABEE reports that he received a PhD from American University in August 1970... ERNEST B. MERCER, JR. is an Electronic Engineer with the Federal Aviation Administration in Atlantic City, New Jersey. He is a resident of Northfield, New Jersey... MARIO M. TAMA, JR. is located in Vermont where he is an Engineer with Poma Aerial Tramways, Inc. of Woodstock, Vermont and is a resident of North Pomfret, Vermont... CARL M. YOUNGMAN was recently honored by being selected Manager of the Year for the Boston area of the Boston Chapter, Society for the Advancement of Management. Carl is employed by Honeywell, Inc. of Newton as Director of Planning and Development, Division of Field Engineering...

Married: THOMAS J. MODZELEWSKI to Miss Arlene Frances Flynn of Yonkers, New York on April 17, 1971. Tom is a resident engineer with Leeds & Northrup Co. and is currently located in Louisville, Kentucky.

Married: DENNIS W. BALOG to Miss Sally A. Lampropoulos of Ipswich, Massachusetts on May 7, 1971. Dennis is Manager of the lamp development engineering department of Sylvania Electric Products, Inc. of Salem, Massachusetts. The couple is residing in North Andover, Massachusetts.

ROBERT B. BRIDGMAN, who is employed as an engineer by the Boeing Company of Seattle, Washington, is a resident of Kent, Washington... Maryland is the location of DR. WARREN J. ERESIAN, JR. He is a physicist in the Applied Physics Lab. of John Hopkins University in Silver Spring, Maryland and he is a resident of Glenelg, Maryland... DONALD A. GHIZ has left the Agrico Chemical Company of Carteret, New Jersey and is now employed as a Chemical Plant Superintendent with the National Lead Company in Salt Lake City, Utah... RICHARD H. RYCZEK was recently certified as a Professional Engineer in the State of New York. Dick is employed by the Niagara Mohawk Power Company in Albany and is a resident of Niskayuna, New York... STANLEY SZYMANSKI continues to be employed as a Sales Engineer for Hooker Chemical Corporation and is residing in Golden Valley, Minnesota... PAUL B. WATSON wrote in May that he had been promoted to the rank of Captain in the US Air Force and that he was rated as an instructor pilot on the C-141 jet transport. He is based at Dover Air Force Base, Dover, Delaware.

1965

Married: HAROLD R. CONNELL to Miss Maxine Ann Ashley of Swansea on April 17, 1971. Harold is a member of the Planning Board of the Town of Fall River, Massachusetts where the couple also resides.

Married: JOHN T. HART to Miss Andrea S. Holland of Waltham, Massachusetts on March 27, 1971. Mr. and Mrs. Hart are both employed by the Medical Electronics Division of the Hewlett Packard Company in Waltham, Massachusetts and they are residing in Burlington, Massachusetts.

Born: Mr. and Mrs. HENRY J. SKONIECZNY, a son, Stephen Paul, on October 15, 1970. Mr. Skonieczny, who received a MS degree in Mechanical Engineering from RPI in 1968, is a Senior Test Engineer at the Fafnir Bearing Company in New Britain, Connecticut. The couple resides in Plainville, Connecticut.

Born: Mr. and Mrs. PHILIP I. BACHELDER, their third son in July of 1970. Phil reports that he's working part-time toward a master's degree in Management Science at RPI and that he was was promoted to Manager of Process Development Engineering at Scott Graphics, Inc. of Holyoke, Massachusetts.

ROBERT W. ASPLUND is a senior electronic engineer with the Sylvania Division of General Telephone and Electronics in Muncy, Pennsylvania. Bob is a resident of Williamsport, Pennsylvania... The Commonwealth of Massachusetts, Department of Mental Health employs JAMES B. CALVIN as a Special Service Assistant. Jim is a resident of Plymouth, Massachusetts... Hamilton Standard Division of United Aircraft Corporation employs GEORGE W. CORDES, JR. as a development engineer in Windsor Locks, Connecticut. George is a resident of Westfield, Massachusetts... ALBERT L. GIANNOTTI, JR. is a planning analyst with the Babcock and Wilcox Company in Barberton, Ohio. Al is a resident of Canton, Ohio and is a recent recipient of a MBA degree from the State University of New York at Buffalo... MORDECAI GUTMAN has received his discharge from US Air Force and is now employed in Allen Park, Michigan as a Production Supervisor in the Packaging Area of Frito-Lay Inc. He is a resident of Southfield, Michigan... DR. DONALD L. KERR reports that he is employed in the Research Laboratories of the Eastman Kodak Company in Rochester since the fall of 1969 and that the couple's first child, a daughter, Elizabeth Gail was born on December 22, 1969... Bell Telephone Labs continues to employ HARRY A. MILDONIAN, JR. as a member of technical staff and Harry is now located in North Andover, Massachusetts... Agrico Chemical Company, division of Continental Oil Company of Carteret, New Jersey, continues to employ WPI graduate as their plant manager. JAMES F. MILLS has succeeded DONALD GHIZ in that position. He is a resident of Woodbridge, New Jersey... RICHARD M. MURPHY, who is an Estimator for the Granger Contracting Company, Inc. of Worcester, is now a resident of Paxton, Massachusetts... After receiving a master's degree in Physics from Northeastern University in 1970, S. EDWARD NEISTER has moved to Wickenburg, Arizona where he is President of Phase-R Corporation... JAMES B. NYSTROM has received a PhD degree in Mechanical Engineering from WPI... Providence, Rhode Island is the business location of VIJAY D. SHETH where he is employed by the General Electric Company. Mr. Sheth is a resident of Newtonville, Mass... DR. WILLIAM P. ZERONSA, who has received both a Master's and a Phd degree from the University of Massachusetts, is a staff researcher for Charles Pfizer, Inc. in Groton, Connecticut. He is a resident of Quaker Hill, Connecticut.

RICHARD N. BROWN is an Engineer with the Naval Underwater System Center at Newport, Rhode Island... CHARLES H. DUFOUR was recently promoted to the position of Assistant to the Chief Mechanical Engineer for the Cottrell Company, Westerly, Rhode Island... WILLIAM F. HINES, JR. writes that he graduated from Wharton Graduate School of the University of Pennsylvania with an MBA in 1970 and that since then he's been working with E. I. dePont deNemours & Company, Inc. in Wilmington, Delaware as a Technical Representative... JOHN F. KELLEY III is back in his home state of Maine where he is an Estimator-Project Engineer with Stewart & Williams, Inc. of Augusta, Maine... Another member of the class with E.I. duPont & deNemours & Company, Inc. is JOHN R. LEWIS. He is a Research Chemist in Philadelphia... RICHARD W. REYNOLDS is in Hawaii where he is at the University of Hawaii as a student in the Department of Oceanography... RICHARD K. SEAVER is a Senior Experimental Engineer with the Hamilton Standard Division of the United Aircraft Corporation in Windsor Locks, Connecticut.

1966

Army 1st Lt. PHILIP S. BLACKMAN is currently stationed at Fort Riley, Kansas... GARNER W. DUVALL, JR. is a Mechanical Engineer in the Design and Construction Division of the General Services Administration, Washington, D.C... DONALD P. GIVENS has received a masters degree from the University of Massachusetts and has accepted a position with Envirotech Corporation of Brisbane, Califor-

nia... DR. MALCOLM A. MacGREGOR has received a PhD degree from the University of Connecticut and is presently a Research Associate in the Department of Chemistry at the University of Chicago... ERROLD F. MOODY, JR. is in El Monte, California where he is a Quality Control Engineer with Ameron. He is a resident of Pasadena... JOHN A. STOCKHAUS has returned to WPI where he is a graduate student in the Civil Engineering Dept. under a U.S. Army Grant.

1966

DENNIS E. APPLEYARD has received a master of science degree in Electrical Engineering from the University of Colorado... H. JOHN BRALEY is a Lt. in the United States Air Force and is stationed with the Military Airlift Command at Scott Air Force Base, Illinois. Last spring he was selected as Junior Officer of the Month for services with the air command's management office... Raytheon Company employs JEFFREY S. CHEYNE as a Logic Design Engineer in Sudbury, Mass. Jeff is a resident of Mansfield, Mass... Located out on the beautiful coast of California is Naval Lt. JAMES A. COCCI. Jim is stationed at the U.S. Naval Postgraduate School at Monterey, California... General Electric Company employs WILLIAM V. COLLENTRO as a Chemical Engineer at their Knolls Atomic Power Lab in Windsor, Connecticut. Bill is a resident of Bloomfield, Connecticut... Air Force Capt. ROBERT B. DOLAN is stationed at Wright-Patterson AFB, Ohio... DR. RONALD D. FINN, who received a PhD degree from Virginia Polytechnic Institute in 1970, is a Research Associate with the U.S. Government Atomic Energy Commission, Brookhaven National Laboratory, in Upton, Long Island, New York... PETER GRAY IV is an Assistant Engineer with the N.Y. Telephone Company and works and resides in Poughkeepsie, New York... IZUMI IKETANI, MS, is an Information Officer of Civil Engineering with the Japan Information Center of Science and Technology, Tokyo, Japan where he also resides... James Hunter Machine Company of North Adams, Massachusetts employs DAVID L. JORCZAK, MS, as a Project Engineer... JOHN J. LENART is residing in Reston, Virginia, and is a Programmer and Data Analyst with the U.S. Coast Guard, National Oceanic & Atmospheric Administration, Test & Evaluation Lab in Sterling, Virginia... We have learned that CHING SOO LIU, MS, continues to be employed by the Charles T. Main Company, Inc. of Boston, Massachusetts as a Structural Engineer... RICHARD B. NELSON is a graduate student at the University of Oklahoma and at the same time is self-employed as a Petroleum Field Engineer ... South Bend, Indiana is the new location of PAUL F. PETERSON, where he is a senior systems programmer with Associate Mkt. & Computer Services Company, Inc... EARL A. SCOTT continues to be employed by the Pratt & Whitney Aircraft Division of the United Aircraft Corporation in West Palm Beach, Florida, where he is a Senior Analytical Engineer... We have learned that Stone & Webster Engineering Corporation of Boston, Massachusetts employs LAURENCE E. SHEA as a Field Engineer and Larry is located in Oswego, New York... Norden Division of the United Aircraft Corporation employs CHARLES C. SLAMA as an engineer in Norwalk, Connecticut, where he is also a resident... JESSE R. STALKER, JR. is an Engineer in the Compounder Development Department of the Goodyear Tire & Rubber Company operation in Windsor, Vermont. Jesse resides in West Lebanon, New Hampshire... An Environmental Engineer with the Stone & Webster Engineering Corporation of Boston, Massachusetts, is LEONARD J. WECKEL. Lennie resides in Winchester, Massachusetts... ROBERT C. ZAHNKE is in the Syracuse, New York area where he is a Project Engineer with Allied Chemical Corporation in the Solvay Process Division... DONALD H. FOLEY recently received a PhD degree in Electrical Engineering from Syracuse University.

1967

CLINTON A. INGLEE is a Sales Engineer with the Torrington Company in Philadelphia, Pennsylvania and he is a resident of Willingboro, New Jersey... Lt. RENE B. LAPIERRE is a Navigator in the U.S. Air Force and is stationed at Mather AFB, California... An Associate Scientist with the Polaroid Corporation in Cambridge, Massachusetts is ROBERT H. LORING... Consolidated Edison of New York has named STEPHEN B. STATZ to a position as Project Engineer. Steve is a resident of Valley Stream, New York.

Born: Mr. and Mrs. SUDHIR A. SHAH on January 8, 1970 a daughter, Julie. Mr. Shah is a Project Engineer with the James P. Purcell Associates of Hartford, Connecticut.

MARCEL R. BENJAMIN, SIM, is Manager of Management Training and Development for the American Optical Company of Southbridge, Massachusetts... EARL D. BERRY, SIM, has been named Assistant Treasurer of Woodbury & Co., Inc. of Worcester... Loctite Corp. of Newington, Connecticut employs EDWARD J. BOTWICK as a Process Development Engineer and he is a resident of West Hartford... Continuing his education at the University of Connecticut is ALAN C. BOULEY. Alan is a graduate research assistant in the Department of Physics... FRANCIS A. GAY is a member of the Technical Staff of Bell Telephone Labs in Naperville, Illinois... Back at WPI following his discharge from the service is RICHARD C. HOLLER. Dick is a graduate in the Computer Science Department... Another member of the class who is with the Bell Telephone Labs in Naperville, Illinois is ALAN H. MILLER... ROBERT D. RENN is an Industrial Engineer with the General Dynamics Corporation in Quincy, Massachusetts... Another member of the class pursuing an advanced degree is KENNETH H. REX. Kennie is a student in the Physics Department at RPI... Army 1st Lt. THOMAS A. RICCHI received the Army's Bronze Star Medal in Vietnam on February 18. He received the award while assigned as commanding officer of the heavy cable construction detachment, U.S. Army Strategic Communications Command near Phu Bai, Vietnam. Prior to entering the Service Tom was with the General Electric Company... An instructor in the Business Division at Mt. Wachusett Community College, Gardner, Massachusetts is RAYMOND C. ROGERS. Ray resides in Winchendon, Massachusetts... Northeast Utilities Service Company of Meriden, Connecticut employs PETER G. SHANLEY as an Assistant Engineer in the Mechanical & Nuclear Engineering Department. He is Assistant Project Engineer on the company's largest nuclear power plant, Millstone Unit No. 2... CHARLES M. WOJEWODA is with the Monsanto Chemical Corporation in Springfield, Massachusetts as a Process Engineer. Charlie is residing in Ludlow, Massachusetts.

1968

Married: JOHN H. HOLMES to Miss Margaret Chang, of Saugus, Mass., on April 18, 1970. Jack is a teacher at Eastern Jr. High School, in Lynn, Mass. and is a resident of Concord, Mass... JOHN J. KRASKA, JR. to Miss Christine L. Hryniewicz, of Millbury, Mass., on October 11, 1970. John is Manager of Kraska Corporation, of Worcester, and the couple is residing in Worcester... MICHAEL T. NOWAK to Miss Sheila M. Clark, of New Haven, Connecticut, on February 20, 1971.

Born: to Lt. and Mrs. DANIEL C. CREAMER, a daughter Jennifer Anne, on October 18, 1970. Lt. CREAMER is a Guided Missile Maintenance Officer with the U.S. Army and is stationed in Giessen, Germany.

Army First Lieutenant ROBERT E. ANDERSON is stationed in Sinop, Turkey. Bob recently received the Army's Meritorious Service Medal for "exceptionally meritorious service as commanding officer of the U.S. Logistics Group, 169th Detachment near Sinop, Turkey."... ALAN R. BERG is a member of the U.S. Air Force and is stationed in Manila, Philippines... GALO O. CASCANTE-LOPEZ, MS, is located in Quito, Ecuador, South America where he is employed in the Integration Division of the

Industrial Development Center... EDWARD M. CHAUSZ continues to be employed by E. I. duPont de Nemours & Company, Inc. and is presently located in Deepwater, New Jersey... KENNETH A. CRAWFORD is employed in Circuit Design by the Cogar Corp. of Wappingers Falls, New York where he is also a resident... ERIC K. DURLING has been promoted to the rank of Captain in the U.S. Army... FEREYDOON FAMILY is back in Worcester where he is a graduate student at Clark University... Army Captain ROBERT J. GALLO recently completed an engineer officer construction planning course at Fort Belvoir, Virginia and is slated for a tour of duty in Vietnam... Raytheon Company of Waltham, Mass. employs MICHAEL T. GLYNN as a Quality Control Engineer. Mike lives in Watertown, Mass... DAVID H. HALL is Activity Civil Engineer with the U.S. Naval Reserve Public Works Center in Pensacola, Florida... DAVID A. HOPKINSON is working in Indian Orchard, Mass. as a Research Engineer with the Monsanto Company.

ROBERT V. GENEREUX is a Sales Services Engineer with AMF, CUNO Division of Meriden, Conn. Vinney resides in New Britain... CHARLES D. KONOPKA is an instructor in the Math Department at the University of Hartford, Connecticut... JOHN J. KORZICK is a Field Engineer with Cincinnati Milacron in Arlington Heights, Illinois... JOSEPH C. NAPPI is a graduate student at RPI at Troy, New York... SCOTT W. RAMSAY has been named Assistant Power Engineer at the United Illuminating Company in New Haven, Connecticut... DANIEL R. ROY continues to be employed by the General Electric Company of Lynn, Massachusetts and is presently a Product Design Engineer... Engineer with E. I. DuPont deNemours & Company in Wilmington, Delware is STEPHEN C. SCHWARM... GREGORY H. SOVAS is currently on a leave of absence from the New York State Department of Environmental Conservation while he is a graduate student at the University of Massachusetts. He expects to receive his MS degree in Environmental Engineering in September, 1971... LEO T. SPRECHER is a computer analyst with the Computer Sciences Corporation of Moorestown, New Jersey.

Born: Mr. and Mrs. JOHN H. McCABE, a son, Jason Roe on April 29, 1971. Jack is now employed by Hammond Plastics, Inc. of Worcester, Massachusetts.

Married: DAVID J. GUMBLEY to Miss Mary E. Harold of Milford, Connecticut on May 1, 1971. Dave is employed by the Campennella Corporation of Warwick, Rhode Island... CHARLES T. KLEMAN has received an MS degree in Physics from Michigan State University and is employed by the U.S. Government at the Naval Weapons Laboratory in Dahlgren, Virginia... RAYMOND C. LUNDGREN, JR. is Vice President & Superintendent of The Henley-Lundgren Company of Shrewsbury, Massachusetts. Ray is currently residing in Buzzards Bay, Mass... WILLIAM J. McCARTHY is an Actuarial Associate at State Mutual Life Assurance Company of America, in Worcester... JOHN E. MERRITT is a PFC in the U.S. Army... DOUGLAS A. MURRAY is a Microwave Design Engineer for the Raytheon Company's Missile Systems Division, in Andover, Massachusetts... Becton, Dickinson & Company of East Rutherford, New Jersey employs FRANCIS J. POSSELT, JR. as an Engineer... RICHARD H. SEYMOUR is Chief Engineer at the Presmet Corporation of Worcester, Massachusetts and he is a resident of Charlton, Massachusetts.

PAUL F. STASKO is a General Engineer at the Portsmouth Naval Shipyard, Portsmouth, New Hampshire.

1969

Married: STEPHEN D. COPE, JR. to Miss Geraldine A. Hanney of Palmer, Massachusetts on January 16, 1971. Steve is employed as a Field Supervisor by the General Electric Company and is presently awaiting an overseas assignment. The couple is making their home in Sunbury, Pennsylvania... Air Force Lieutenant DOUGLAS A. NELSON to Miss Marilea G. Robbins, of Milford, on February 27, 1971. Doug is a pilot in the Air Force and is currently stationed at George Air Force Base, California.

ALFRED A. ALICANDRO SIM is President of Entec Plastic & Engineering Corporation of Leominster, Massachusetts... Army 1st Lt. FRANCIS P. ARCHAMBEAULT is currently stationed in Vietnam. On March 15 Lieutenant Archambeault received his second award of the Army Commendation Medal... Port Arthur, Texas is the location of JOSEPH E. FITZGERALD, JR. Joe is an Environmental Engineer with the Gulf Oil Company... CHARLES E. FORD, JR. is employed in Field Service work with the Bailey Meter Company and is presently residing in Euclid, Ohio... JAMES T. HEINRICH is a Field Engineer with the Elliott Company in Chicago, Illinois... DAVID E. JERVIS is an Electrical Engineer for the Raytheon Company in Wayland, Mass. and is a resident of Framingham, Massachusetts... CHARLES A. KALAUSKAS is presently serving with the U.S. Army at Fort Stewart, Georgia while waiting for an assignment to Vietnam... Another of the class in the Army is MARK H. LePAIN. He is currently stationed at Fort Bliss, Texas. He entered the Army in October, 1970... A graduate student at MIT is RICHARD H. McCUE, JR... Alan M. Voorhees & Associates of McLean, Virginia Employs EDWARD A. MIERZEJEWSKI as an Engineer/Planner. Ed recently received a master's degree from MIT and he is presently living in Alexandria, Virginia... Stationed at Fort Benning, Georgia, with the U.S. Army is ROGER W. MILES... Xerox Corporation employs JAMES B. MYERS as an Associate Engineer in Webster, N.Y... JAMES V. ROSSI is presently employed in Florida by the Pratt & Whitney Aircraft Division, UAC Corporation, at their Florida Research and Development Center in West Palm Beach. He is a Facility Design Engineer... MARK S. SIMPSON is employed as an Engineer by E. I. DuPont deNemours & Company, Inc. at their Jackson Labs, Chambers Works, in Deepwater, New Jersey... Army PFC JOHN S. STARSIAK is currently stationed in Vietnam.

RONALD L. JONES is a Development Engineer with Kelly Springfield Tire Company Division of Goodyear Tire & Rubber Company in Fayetteville, North Carolina... PHILIP M. KAZEMERSKY is a graduate student at Ohio State University where he received a MS degree in 1970... KRIS L. NELSON is a private in the U.S. Army... GREGORY E. POLLOCK has received a MBA in Marketing from C.W. Post College. Greg is a resident of Carle Place, New York... RAYMOND B. STANLEY is an engineer with Western Electric Company in Winston-Salem, North Carolina... Another member of the class with the Western Electric Company is DAVID W. SWENSON. He is in North Andover, Massachusetts and is an Information Systems Engineer.

Married: KENNETH B. BERUBE to Miss Margaret Ann Withey of Middletown, Connecticut on April 24, 1971. Ken is an engineering supervisor at the Worcester Works division of United States Steel Corporation. The couple is residing in Millbury, Massachusetts... Also on April 24, 1971 CHESTER D. BLACKMAN, JR. married Miss Diane K. Dembkoski of Charlton, Massachusetts. He is a candidate for a masters degree in Metallurgy at RPI... ALVIN B. PAULY to Miss Mary Lynn Wilson of Reidsvill, North Carolina on May 1, 1971. Mr. Pauly is a Project Engineer with Westvaco Corporation of Luke, Maryland and the couple is residing in Westernport, Maryland.

BRIAN T. ABRAHAM is a 1st Lt. with the U.S. Army in Vietnam... KENNETH C. AMEND is a 2nd Lt. with the U.S. Air Force in Charleston, S.C... JAMES P. ATKINSON, a preventive medicine specialist in the U.S. Army, has been promoted to Specialist 5... ARTHUR H. EVANS, III, is a sales engineer with Goulds Pumps, Inc., in Natick, Mass... JAMES W. FOLEY received his MS in systems engineering last June from Case-Western Reserve University, where he is continuing his studies for the PhD. James and his wife Ella Mae had a daughter, Aileen Ann, last October... 2nd Lt. ALFRED G.

FREEBERG (USAF) has earned the silver wings of a navigator. . . JAMES W. HAURY is now assistant to the superintendent of the roll shop at Farrel Co., division of USM Corp. . . WILLIAM E. HALLOCK is construction and maintenance supervisor for Shell Oil in Wellesley, Mass. . . JEFFREY C. KNAPP received an MS in business administration from the University of New Hampshire. . . EDWARD A. MIERZEJEWSKI is now a traffic operations engineer with Alan M. Voorhees & Associates in McLean, Va. . . GORDON R. MILLER was promoted to captain in the U.S. Army while serving in Vietnam. . . JOHN J. PACE is general manager of Lakeside Heat Treating Company in Solon, Ohio. . . RONALD ROBERTS and his wife Linda had their first son, Jason Michael, in April. Ron is employed as a development engineer with Western Electric in No. Andover, Mass. . . JOHN F. POBLOCKI is presently on leave of absence from Metcalf & Eddy, Inc., while studying for a master's degree in community planning at the University of Rhode Island. . . RICHARD P. ROMEO was awarded an MBA from Dartmouth College in June. . . KENT F. ROTHAMMER is a technical service chemist with National Starch & Chemical Corp. in Chicago. . . Air Force 2nd Lt. EARL M. SPINKS has graduated from pilot school, and has been assigned to McCord AFB, Wash., where he will fly the C–141 Starlifter cargo-troop carrier with the Military Airlift Command. . . HENRY S. SWEET has recently been promoted to 1st Lt. He is battalion adjutant and public information officer with the 65th artillery, U.S. Army Defense Command, in Key West, Fla. . . THOMAS F. TAYLOR is due to graduate from Army OCS at Fort Sill, Okla., in November.

Married: STEPHEN D. FISCHER, to Cheryl L. Molyn, in Enfield, Conn., on May 22. The bride is a graduate of Becker Junior College. Mr. Fischer is employed as a product support manager at Hewlett-Packard. . . STEVEN A. HUNTER, to Martha J. Fuller, on August 14 in Worcester. The groom is an ME graduate student at WPI. . . DUNCAN R. LOOMIS, to Diane Irene Holly, at a double-ring ceremony in Mystic, Conn., on May 22. Loomis works at United Illuminating Company.

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1970

MICHAEL E. ARSLAN writes he is a manufacturing management program trainee with General Electric. . . GREGORY W. BACKSTROM, son of Carl W. Backstrom, '30, is an associate quality control engineer with Xerox Corp. . . JOSEPH BECHER III is now farming in South Paris, Maine. . . RICHARD E. BERGERON is a naval ensign. . . MARK E. BROWN has been awarded a National Science Foundation graduate traineeship at the University of Minnesota. . . Ens. PAUL F. DRESSER is in training to become a Navy jet pilot. . . PAUL D. HIMOTTU is an associate engineer with Raytheon Company. . . PAUL E. MEDEIROS is a junior engineer with the N.Y. State Dept. of Transportation in Poughkeepsie. . . GEORGE P. MOORE is a law student at Suffolk Univ. . . BRUCE E. SAMUELSON is a sales engineer with R.B. Taylor Corp., Albany, N.Y. . . BOHDAN SYWAK is a mechanical engineer with the Ammunition Development & Engineering Laboratories of the U.S. Army Munitions Command in Philadelphia. . .

Married: 2nd Lt. TERRENCE F. BULGER, and Jean Marie Pietrzak of Worcester, on July 10, 1971. Lt. Bulger is stationed with the Army in Newport News, Va. . . DENNIS F. DAMICO and Maryanne C. Burak, married on June 12 in Worcester. Damico is a graduate student at the University of Illinois. . . EDWARD VINCENT JALOWIEC and Louise Sargent, in Worcester, on July 10. Mr. Jalowiec is employed by American Optical Co. in Southbridge, Mass. . . . ROBERT R. MATTSON and Jean Kelly, on May 15, 1971, in Holden, Mass. Mattson is a products engineer for Wyman-Gordon Co. and a WPI graduate student. . . JOHN A. PELLI, engaged to Marcia Karen Mitchell of Cranston, R.I. An October wedding is planned. Pelli is a dealer consultant for the Trance Company, LaCrosse, Wis. . . PHILIP C. RADER and Marlene M. Serrell, on May 1, 1971. Rader is employed by Combustion Engineering, Inc., of Windsor, Conn. . . RICHARD B. ROCK and Eileen M. O'Brien, on June 19. Rock is a project engineer for United Engineers & Constructors, Inc., and a graduate student at Drexel University in Philadelphia. . . RANDOLPH J. SABLICH and Marie Brozoski on May 23. He works for Grumman Aerospace Corp. on Long Island.

Air Force 2nd Lt. FRANCIS L. BELISLE, JR., MS is stationed at Eglin AFB, Florida. . . ANDREW J. GIOKAS is a 2nd Lieutenant in the U.S. Army. . . FRED H. TUTTLE, JR. is a Production Supervisor with Charles Pfizer & Company of Groton, Connecticut. . . JAMES H. VERGOW is a member of the U.S. Air Force and is stationed at Keesler AFB, Mississippi.

Married: Army 2nd Lt. ROBERT C. COURNOYER to Miss Diane C. Ravenelle of Nashua, New Hampshire on March 12, 1971. Bob is currently stationed at Fort Devens, Massachusetts. . . STEPHEN E. BERNACKI to Miss Karen E. Jessie of Worcester, Massachusetts on April 25, 1971. The couple is residing in Worcester. . . Army 2nd Lt. PHILIP C. RADER to Miss Marlene M. Serrell of Turners Falls, Massachusetts on May 1, 1971. Phil is a Chemical Engineer with Combustion Engineering, Inc. in Windsor Locks, Connecticut. . . Army Lt. MICHARL E. SANTOM to Miss Cristine M. Girard of Worcester, Massachusetts on May 8, 1971. Mike is currently stationed at Ft. Leonard Wood, Missouri.

Married: DAVID R. BROWN to Miss Ann M. Bundeff, of Worcester, Mass. on February 14, 1971. Dave is employed by the Rodney Hunt Company of Orange, Massachusetts as a Project Engineer and the couple is residing in Spencer, Massachusetts. . . WILLIAM G. HILLNER to Miss Helen Lee Thomas, of Rushville, Missouri, October 10, 1970. Bill has completed a training program with The Trane Company, in LaCrosse, Wisconsin, and is now located in Boston as a Sales Engineer. The couple is residing in Needham Heights, Massachusetts. . . CHARLES E. BASNER is a Highway Engineer Trainee with the Federal Government's Department of Transportation in Washington, D.C. . . A Development Engineer with the Universal Oil Products Company of McCook, Illinois, is BRADFORD L. BJORKLUND. . . Located in Bloomfield, Connecticut is JOHN T. BOK, where he is an industrial Engineer with the

Allen Mfg. Company... EDWARD J. BOROWIEC is an Ensign in the U.S. Navy... KENNETH G. CRAM is a Pvt. in the U.S. Army and is stationed at Fort Knox, Kentucky... Pratt & Whitney Aircraft Division of United Aircraft Corp. employs JOHN P. DEMASE, as an Experimental Engineer in East Hartford, Conn. where he resides. Early in 1971 PETER J. DENONCOURT was commissioned an ensign in the U.S. Coast Guard... DWIGHT S. DICKERMAN is an Engineer with the Linde Division of the Union Carbide Corporation in Tonawanda, New York... Located at WPI's Alden Research Labs as a graduate student is ROBERT A. DiDOMENICO...

Six members of the class in the U.S. Army are: JEFFREY A. FREELAND A PFC stationed at Redstone Arsenal, Alabama; 2nd LT. MARK W. GEMBORYS stationed at Fort Benning, Georgia; EDWARD E. HOWE a Communications Officer in Europe; 2nd Lt. WILLIAM M. ROLYA stationed at Fort Knox, Kentucky; SP 4 ROBERT W. SOFFEL a Quartermaster Instructor at Fort Lee, Virginia; and 2nd Lt. PHILIP C. WARREN, Platoon Leader stationed in Europe... A member of the U.S. Navy is RICHARD H. SOMERS, who is with the Naval Ship Engineering Center at Hyattsville, Maryland... ROBERT J. GOODNESS is an Industrial Engineer with the Plymouth Rubber Company, of Canton, Mass... WILLIAM B. HEALD is an Environmental Analyst with the Scientific Co. Inc. of Windsor, Connecticut... THOMAS D. HEINOLD is a Manufacturing Engineer with the Heald Machine Division of Cincinnati Milacron, in Worcester... Another graduate student is LEE C. MALBON who is in the Physics Department at Boston College as a graduate assistant... A Marketing Representative for the IBM Corporation in Waltham, Massachusetts, is ALAN H. MILLER... A Structural Designer for the B&M Corporation of Boston, Mass. is VINAY V. MUDHOLKAR. He is a resident of Somerville, Massachusetts... Employed by Ebasco Services, Inc., at the Nuclear Power Plant in Vernon, Vermont, as an Electrical Inspector is CHESTER J. NAPIKOSKI. He is a resident of Millers Falls, Massachusetts... Procter and Gamble Company employs W. STUART NICKERSON in Quincy, Massachusetts as a Bar Soap Supervisor... WILLIAM D. PARENT is a Teaching Assistant at the University of California's Santa Barbara campus... ALAN S. PRUCNAL is in Boston where he is employed as a Sanitary Engineer by Camp, Dresser & McKee... JOHN K. REDMON, MS, is located in Allentown, Pennsylvania where he is Education Administrator with the Pennsylvania Power & Light Company... JOHN J. RING, JR. is a Process Control Specialist with the General Electric Company in Schenectady, New York... Turner Construction Company of New York employs JOSEPH W. SHAW. Joe is currently residing in Glendale Heights, Illinois... Another member of the class who is continuing his education is FRANCIS A. VERNILE. He is a graduate student at the University of Connecticut.

1971

THOMAS J. D'ANDREA is a 2nd Lt. in the U.S. Army and is stationed at Ft. Bliss, Texas... RONALD K. VANDER KRUIK, MS is a Microwave Design Engineer with the Raytheon Company in Wayland, Massachusetts.

JOSEPH B. CARTER is a student at the University of Minnesota Medical School... ERNEST A. EVANCIC, MS '71, is manager of product development for Simonds Saw & Steel in Fitchburg, Mass... BRUCE A. HILLSON is an assistant engineer for the State of Maine Highway Commission... DONALD M. JOHNSON is an industrial engineer at Cranston Print Works, Webster, Mass... JOSEPH BARRY KAYE is a graduate student at Springfield (Mass.) College... ELAINE S. KOWALEWSKI, MS '71, is a visiting instructor in the Math department at WPI... DOUGLAS W. KULLMAN is now employed as an engineer in training by the department of Highways of the State of Ohio... JOSEPH E. LAPTEWICZ, JR., is a graduate fellow at Cornell University... MICHAEL S. LATKA is an assistant engineer with the Factory Insurance Association in Boston... TOH-MING LU, MS '71, is a

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grad student in physics at the University of Wisconsin... 1st Lt. THEODORE E. LYNCH, MS '71, has begun a five-year tour of duty with the Air Force. He will work in nuclear research in New Mexico... THOMAS F. MIRARCHI is working with Goodyear Tire & Rubber in Akron... JAMES P. MURPHY is with Improved Machinery Corp. in Nashua, N.H... EUGENE PETTINELLI holds a teaching assistantship and grant from the University of California, Berkeley, where he is studying for a master's degree... LAWRENCE E. RAINVILLE is with Raytheon Company ... DONALD P. ST. MARIE is sports information director at WPI this year... RAYMOND L. SKOWYRA is a field engineer, installation & service eng. dept., General Electric Co., in Schenectady, N.Y... CHARLES A. SUMNER is a design engineer with Newport News Shipbuilding & Dry Dock Co., Va... THOMAS C. HOWES, JR., works for Mohawk Data Sciences in East Herkimer, N.Y., as an associate engineer... PAUL J. TRUDEAU is in a training program with Stone & Webster Engineering Corp. in Boston... DAVID TRUE works for New England Power Co. in Somerset, Mass... MICHAEL J. WINN is inn manager for John Murphy, Wellfleet, Mass.

Married: RICHARD A. ARENA and Carol Anne Halkerston, on June 13. He is an engineer for Beacon Construction Co. in Boston.. ROBERT ALTON ANDERSON and Beth Edith Parmenter, on July 10. He is a student enrolled at the University of Connecticut Graduate School of Engineering... THOMAS R. COPP and Mary Jane Plank of Catskill, N.Y., on June 19, 1971. Copp works for Surprenant, Inc., of Jaffrey, N.H... ARTHUR A. JACKMAN and Jane V. Giombetti of Ashland, Mass., on June 19. Jackman is teaching mathematics at Norton (Mass.) Junior-Senior H.S... PHILIP M. JOHNSON and Linda Arline Schmidtchen, on July 10. THOMAS R. COPP was best man, and ushers included NORMAN W. SOUSA, GERALD GRISWALD, RICHARD DYNIA, and FRANCIS SCRILLO... Kathryn Ann Snyder and ALAN JAY KAECHELE, on June 18 in Bridgeport, Conn. Both bride and groom are employed by the Travelers Insurance Co... JOHN L. LANDALL and Nancy Ruth Martin, on June 19 in Worcester. Among the ushers were WILLIAM MEDEIROS and BRUCE HILLSON. Landall, commissioned a 2nd Lt. in the U.S. Army, is serving with the Civil Engineers Corps in Waltham, Mass... BRUCE E. LEFFINGWELL and Karen Jean Nichols, in Waterbury, Conn. on June 19. Mr. Leffingwell is employed as a salesman by North American Urethanes... PAUL J. PAKUS and Dorothy Carlson of Clinton, Mass., on June 27... JOHN H. READ and Nancy Jean Gates, on June 26. John is a grad student at WPI this fall... KENNETH ROBERTS and Diane Wheeler in August. Wheeler is a 2nd Lt. with the Army at Fort Benning, Ga... LAWRENCE SNIEGOSKI and Jean Marie Desjardins, on June 19. The couple is now living in Madison, Wis... THORNTON H. WAITE, MS '71, and Christine Francis, on June 12. Waite, son of Roger T. Waite, '23, is doing graduate work in nuclear engineering at Cornell University... THOMAS J. WERB and Marsha Louise Brown, on August 7.

Class of 1930

The Class of 1930 has started to build its 50th year anniversary gift. As a starter we hope to generate $10,000 or more prior to the solicitation program at the time of our 50th Reunion in 1980. So far we have heard from the following:

Backstrom, Bowers, Carlson, Center, Conley, Cole, Delano, Doyle, Fay, Goodnow, Hall, Hathaway, Hillis, LeBosquet, Locke, Luoma, Marsaw, Marston, O'Grady, Peters, Purcell, Seal, Tawter, Wells, Whittum.

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WPI journal

DECEMBER 1971
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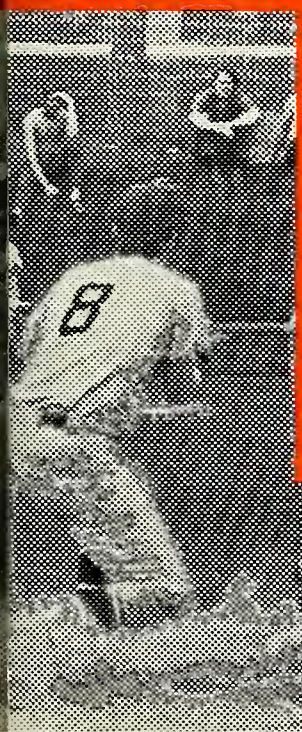

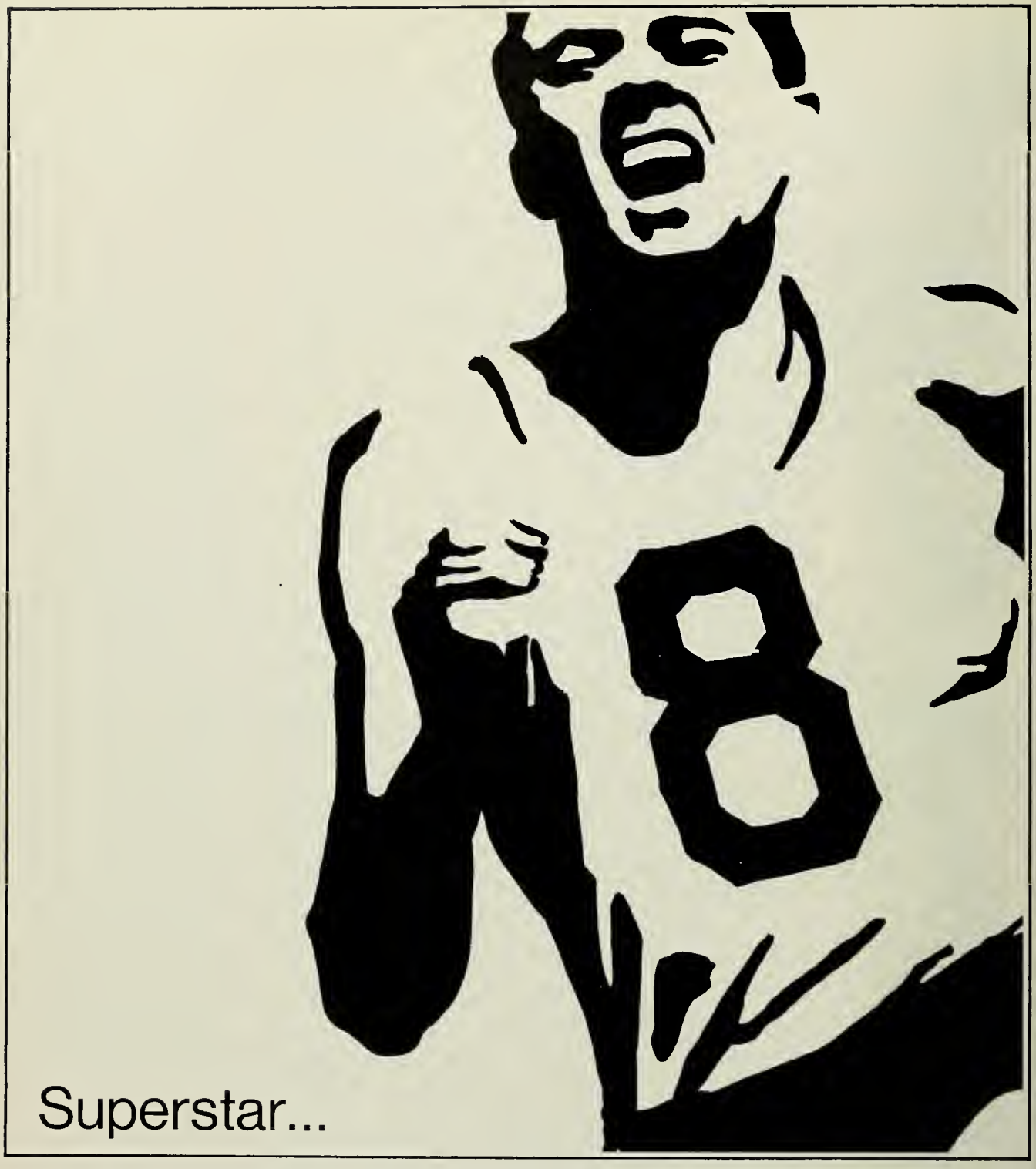

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WPI

journal

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December, 1971

H. Russell Kay
Editor

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And Now — A Word from Our Director . . . . . **page six**
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A brief look at the members of the physical education faculty.

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Athletics at WPI

by Roger N. Perry, Jr., '45

It's quite probable that under your chair is attached a white tag bearing the threatening message, "Do not remove this tag under penalty of law." In line with trends in government warnings, they might add to that message, "Caution: Too much sitting in this chair may be hazardous to your health."

No less an authority than the noted heart specialist Dr. Paul Dudley White has been quoted as saying, "Don't sit on your fatty acids." Dr. White advocates regular exercise and moderation in eating as the key to a long, productive life.

Because the sedentary life is taking such a toll in human lives each year, the athletic and physical education program at WPI must be considered not a frill of higher education but rather a universally needed preparation for life, whatever the graduate chooses as a professional career.

When the late Percy R. Carpenter was appointed WPI's first director of physical education and athletics in 1916, he established the guidelines which are still followed by the department. He firmly believed that a man needed both a good mind and a healthy body. While the rest of the faculty developed the minds, he practically singlehandedly developed the physical education program. His recommendation that physical education be required of all students for four terms was approved and this is still the case today. During the frequently lean years when the administration looked toward the gymnasium as an opportunity for further budget paring, he was successfully able to defend his beliefs.

Under "Doc" Carpenter and his only successor, Prof. Robert W. Pritchard, WPI has developed an athletic and physical education program which is equaled by few colleges of WPI's size — or even much larger institutions.

Emphasis in the program has changed over the years. In "Doc" Carpenter's time, physical education frequently involved calisthenics, bar bells and gymnastics. Under Coach Pritchard and his staff, the emphasis is on teaching the basic skills in athletics and developing in the student an interest in sports he can enjoy throughout life. WPI today fields teams in ten varsity sports and six club sports. But its real claim to fame is the breadth of the department's activities which offer something for the entire student body.

Athletics at WPI are almost as old as the college itself. In the late Herbert Taylor's book *Seventy Years of the Worcester Polytechnic Institute* he mentions that in 1870 the students organized a baseball and a football team. He also mentions that the administration gave no support to athletic activities. In the 1880's, students built their own gym in a grove of trees behind the Washburn Shops. With the official attitude one of toleration rather than encouragement, it fell to the students and the young alumni organization to develop an athletic program. The first permanent Athletic Association was formed in 1894. Track was the sport in which WPI teams did best in those early days. An annual field day on a student-built field now the site of a parking lot on Boynton Street was one of the highlights of the year.

Among the athletes of that period were Charles Harrington, '95, and his brother Frank, '98. Both were track men and Charles also played football. In later years, they often recalled to the athletic staff the times they cleared rocks from the student-created field so the game could begin. Their interest in the WPI athletic program never flagged and in 1968, their desire to do something for WPI athletics took the form of the gift to the college of the Harrington Auditorium.

Another alumnus of the same period, George C. Gordon, '96, had two favorite recollections of his undergraduate days: one was the kindness of Prof. Leonard P. Kinnicutt to him on several occasions, and the other was his experience as manager of the baseball team. He took over a deficit ridden team and finished the year in the black. His undergraduate business experience was a fine preparation for his future career in the forging industry, for at his death in 1964, he left his alma mater $5 million. The baseball team is still solvent so the funds were used, in part, to build

Roger Perry is Director of Public Relations at WPI. A self-described non-athlete, he says, "The fact that I was able to be part of the WPI swimming team for two years as an undergraduate is a true indication that the WPI athletic program has something to offer every student."

the library which bears his name and to endow the Kinnicutt professorship.

It was through the efforts of students and alumni that Alumni Field was built in 1914 and Alumni Gymnasium begun the following year. President Ira Hollis, who took office in 1913, was the first to lend official support to WPI athletics and in hiring Doc Carpenter as the first director of physical education he started a new era in WPI athletics.

President Ralph Earle, quoted in Mildred Tymeson's *Two Towers,* said "Your physical health is a precious thing – guard it well. The athletic team, varsity or class, is well worth all the time you can give it. We emphasize sports here and urge you to take your full measure of it."

The turnabout in official support has paid off by giving WPI one of the finest physical education programs anywhere.

During the planning which resulted in the development of the WPI Plan, each campus department was carefully scrutinized to determine how it measured up to its objectives, and what changes might be required to shift over to the operation of WPI under the Plan. The one which was found to have its program for the Plan already in operation was the Physical Education and Athletics Department.

It's worth noting that although courses under the WPI Plan are all considered to be elective, one program is still required of all students for four terms. . . physical education.

Coach Pritchard always has a few minutes to discuss the WPI physical education program with athletic directors from other colleges for he believes that although colleges may compete on the playing fields, the coaches are all working toward the same goals for their students.

Andy Laska, Athletic Director at Assumption College, expressed an off-campus professional view of the WPI program. "I grew up in Tech's neighborhood and was even one of those obnoxious little kids who sneak into the football games and slide down the grassy slopes. But from those early days and later in my 21 years of involvement in athletics at Holy Cross and Assumption, I've developed a great respect for the WPI athletic program. It is geared to the entire student body, for the real athletes and for the kids who just want to have the fun of playing. Although at Assumption we don't enjoy the scope of athletic facilities which WPI has, I'm trying to pattern our physical education program after Tech's, with its emphasis on serving the entire college through physical education, intramural sports and intercollegiate athletics. As Assumption grows, we'll have the athletic plan to grow with it, thanks to the fine counsel and cooperation I've always enjoyed when working with Bob Pritchard and his staff."

With the completion of the Harrington Auditorium, the department has had the facilities to implement a long-desired extension of the skills taught into the so-called lifetime sports. Students now learn the fundmentals of golf, bowling, handball, squash, tennis, badminton and other sports they can play the rest of their lives. In a 25th reunion survey of the Class of 1945, over 40% reported that golf was their major spare time activity with skiing a close second. About 20% played tennis regularly. Instruction in these sports was something they all had to acquire outside of the college physical education curriculum. Not so today.

A typical student reaction came from Harvey Neilson, '74, who said that he had never played squash before learning the game in a gym class. "Now I play as often as I can and I'm sure it's something I'll do long after I've graduated." Harvey's real body building passion is his ten-speed bicycle which takes him everywhere. During the summer, he rode over 2000 miles. Since school opened, he's added a few hundred more miles, mostly on weekends. He's taken part in a 13 mile road race, finishing seventh against some old pros on the circuit. How fast does he travel? Harvey travels home to Leominster frequently by bike covering the 22 miles in about 55 minutes.

Bicycles are making a comeback on campus and it's not uncommon to see several chained to a railing outside a WPI building. Perhaps today's students have been inspired by the feat of Edward R. Delano, '30, who rode 3200 miles in 35 days from his home in California to his 40th reunion in 1970. Perhaps it's a concern for air pollution which has made bicycles fashionable again. It's a fact that cycle shops are unable to meet demand in many areas.

It was Doc Carpenter who insisted on faculty status for his professional staff. Their primary function was and still is the instruction of classes in physical education. Each member of the staff has expertise in coaching a particular varsity sport but unlike college coaches who work under contract, they aren't faced with relocation nightmares during a losing season. Winning is always sweet but without the pressure of having to win to survive, they are never tempted to put their own professional reputations ahead of the interest of any player on the squad.

WPI coaches all suffer from one handicap which is not shared by most of their counterparts in the intercollegiate coaching fraternity. That is the limited amount of daily practice time. With classes and laboratories scheduled until 4:05, it's at least 4:30 before practice sessions really get underway. All WPI athletes carry the same demanding course loads of their fellow students. They must maintain their grades to remain on the teams.

"Our athletes learn one important skill, whatever their sport," says Coach Pritchard. "They learn to budget their time. Participation in athletics doesn't seem to affect grades adversely. In fact, over the years we've compared the grades of all students with those on our various teams and we find that as a group, athletes are usually a few percentage points higher than the school average."

WPI has had its share of great athletes. Harry L. Dadmun, '91, established WPI records in every running event up to two miles, many of which stood unchallenged for more than 40 years. He achieved national prominence in 1890 when he won the national half-mile championship in Washington. The following summer, he toured Europe with a group of U.S. college athletes, winning the French National 800-meter run.

Richard L. Keith, '14, set WPI record in winning the New England mile title in 1911 which lasted 55 years before being broken by Cary Palulis, '68. In more recent times, Sid Stayman, '44, set a college record of 9.9 seconds in the 100-yard dash which was unchallenged for 30 years until tied by Tom Fieldsend, '74. Some other long standing school records still stand. For example, the 22′ 2½″ long jump of Al DeLoid, '49, and the 220-yard record of 21.6 seconds set by Edwin Hatch, '37, have not been equalled.

WPI has had two undefeated football seasons, 1938 and 1954. They also played one entire season without scoring a point. . . 1941. Soccer enjoyed undefeated seasons in 1938, and 1965. Three WPI soccer players have made All-American — Swang Lee-Aphon in 1960, Ed Cannon (now coach at Worcester Academy) in 1966-67 and Lionel St. Victor in 1970.

There have been several undefeated golf and track seasons.

Although a college's success in athletics is all too often measured by "How did the football team do?", it's only fair to look at the entire spectrum. In 1970-71, WPI varsity teams won 63% of all their contests.

WPI teams may never make nationwide headlines for their success in post-season bowl games, but how many colleges can boast that one student in five is a member of a varsity team?

The athletic program at WPI is not limited to students. Faculty and staff are also encouraged to use the gymnasium facilities. For several years, the department has reserved time during the week when the gyms are available for faculty to work out. The program is sometimes referred to as the "Faculty Fat Boys Club" by those who are trying to stay in shape. During the winter, Saturday mornings at the

swimming pool are reserved for faculty family swimming. The bowling alleys schedule league play not only for students but for teams from the faculty and staff. The Buildings and Grounds department league is one of the most active. There's even a sauna bath.

A few of the faculty and staff are engaged in the particularly active life in their spare time.

Dr. Alan Hoffman, '63, who was captain of the undefeated 1963 track team, hasn't hung up his track shoes yet. Last spring, WPI's speedy mechanical engineering professor competed in the gruelling 26 mile Boston Marathon and finished the course.

Professor Philip Stevenson, chemistry, climbs mountains. His wife shares the interest in the sport but watched from the base camp while he climbed the Grand Teton in 1969 on the last day of their honeymoon. Phil is the faculty advisor of the recently formed WPI Outing Club.

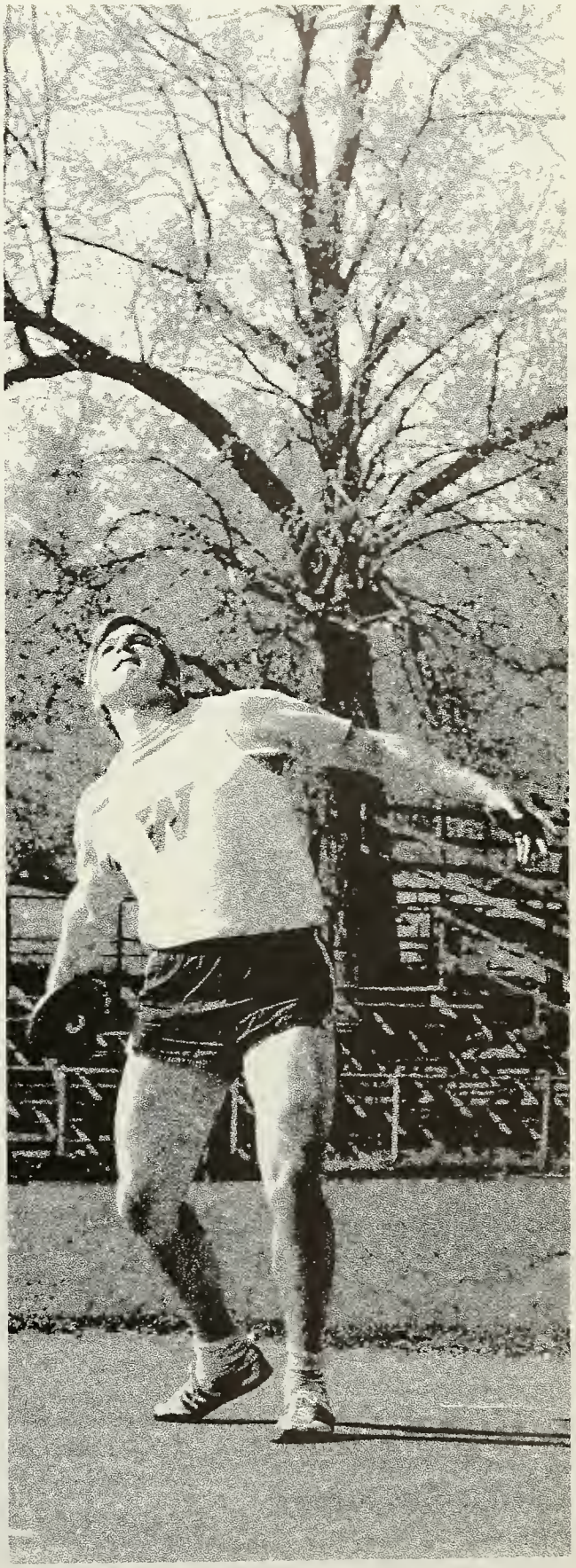
E. Penn Estabrook, assistant director of admissions, is a devotee of white water kayaking. Wearing a warm wet suit, he pursues his sport even in February. "A lot of brandy helps," says Penn about kayaking in winter. He placed first in his class in two major events last summer and took third in another.

Professor Frank DeFalco, civil engineering, won the Baghdad doubles tennis championship in 1969 while studying in Iraq under a Fulbright Scholarship.

Dr. Edward N. Clark, director of research, is a long distance swimmer. He started in 1963 as part of a Red Cross sponsored 50 mile swim program. He surpassed that mark a long time ago and now has logged 250 miles. His interest in swimming goes back to his days as a varsity swimmer at Brown University.

New York Times columnist Arthur Daley last Spring headed his column with "A Plea for Students" and said, "It's probably a half a century since any college authorities even thought of returning to the simplifications and the niceties of our earliest traditions. Once upon a time, the members of all athletic teams were students attending college primarily for an education."

That was too much for WPI President George Hazzard to let pass unchallenged. In his letter to Mr. Daley, he said, in part, "At Worcester Polytechnic Institute, we have never left those traditions. WPI is not a minor league preparation for professional sports, it is major league preparation for life itself. . . About 400 students (out of 1800 undergraduates) participate in intercollegiate sports and all but a few take part in some phase of our physical education program. The program is guided by seven full time and eight part time coaches with an operating budget (exclusive of salaries and maintenance) of under $100,000 a year. We do not seek support for this program through TV receipts or bowl games, for it is an integral part of our educational program. We find that the playing fields do contribute to more than just a sound body, important as it may be. They teach dedication, teamwork and sacrifice."



AND NOW–A WORD FROM OUR DIRECTOR

ROBERT W. PRITCHARD

The WPI faculty, in its considered judgment of the goals of WPI, voted in December 1969, "It is the fundamental purpose of WPI to impart to the student an understanding of a sector of science and technology and a mature understanding of himself and the needs of the people around him." Further, the goal states: "A WPI education should develop in the student a strong degree of self-confidence, an awareness of the community beyond himself."

How does the Physical Education Department and Athletics contribute to these worthy goals? Is all education academic? Is all learning confined to a classroom? Let's take a look and see just what the Department of Physical Education and Athletics does in achieving these goals.

Basically, our staff are college educated and trained individuals whose interests lie in working closely with young people in a controlled atmosphere of teaching skills, of developing talents, of appreciating competition, of demanding discipline and of working constantly in a team atmosphere — an atmosphere which is a must for the WPI Plan to succeed.

There are three areas or levels of activity that we sponsor — each important at its level to the participant. And in all these three — Physical Education, Intramurals and Intercollegiate Program — the following opportunities and values are inherent with increasing degree from physical education up through intercollegiate athletics.

1. To have fun — enjoyment.
2. To improve health and physical tones.
3. To escape from everyday tensions — which no one can avoid.
4. To become more alert both physically and mentally — hence a better student and campus citizen.
5. To experience close interpersonal relationships.
6. To test and develop leadership qualities.
7. To derive the zeal and satisfaction from striving for a goal.
8. To experience and learn about the inevitable stresses of life's situations.
9. To learn discipline and learn to sublimate selfish desires — team work.
10. To test character in a game, for one can act honestly or dishonestly, fair or unfair, courageously or cowardly to constantly occurring instances.
11. To learn self-reliance and to gain confidence.
12. To share and feel the emotions of defeats and victories.

The WPI Plan is a challenge to the faculty and the students and no department has reason for existence if it does not contribute to attaining the common goals of the Plan.

WPI's physical education program teaches skills in interesting lifetime sports and gives the decision maker — the middle and upper management man of the future — healthful, active, life-extending activities that he can pursue with his family and fellow workers. If he pursues physical activity in his maturing years, statistics show his productive life will be extended and enriched.

WPI's intramural program is geared to the slightly more advanced and talented individual who likes the invigorating fun of competing in situations where there is a winner and a loser. The participant is a member of a team. He develops a loyalty and he knows and learns about team work.

The third area of the department's responsibility is the intercollegiate program. We realize that whether we like it or not, the athletic program is often a window on the college and it is through this window that outsiders look and make judgments. Therefore, it is essential that an athletic program be kept in proper balance and perspective. The place of the athletic program reveals the college's priorities. It can also reveal the acquiescence to pressures. The test of WPI's athletic program lies in answer to the question "What does the program do for the person?" If the participant is not the reason for the existence of the program, then it becomes nearly a professional program. If the purpose of the program is to make money, to publicize the school, to satisfy the alumni ego or assuage a state legislature, then much of the educational value of an intercollegiate program is lost.

Physical education, recreation and intramurals do not fulfill the needs of all students. The physically more

talented one, the one who loves competition, the one who likes a challenge cannot be satisfied with recreational and intramural competition. Just as in academics some are spurred on to a higher level of achievement and take an overload or go on to advanced degrees, so also is the need of the physically talented for greater challenges. We do need more recreational opportunities for more students and staff, but recreational opportunities alone do not satisfy the athlete or potential athlete.

There is great need in society today for those attributes that can be best taught and learned in a balanced athletic program. Discipline and loyalty were once successfully taught in the home and church. In these times of changing values, the athletic field is one of the few remaining places where these qualities are being taught.

Some of the most effective teachers and counselors are the coaches. They were the first to begin team teaching — to break things into smaller components and then to bring skills and understanding together in a successful route to learning. Coaches are excellent teachers because they do not teach the easy way. There is no easy way — there are no short cuts in coaching — you can't cut corners. They demand and get hard work and dedicated interest. For, you see, a coach and a team are at a disadvantage when compared to a classroom situation. In a game, you don't pass the course with a 60 or 70 percent effort; if you rate a 60 or 70, you don't pass — you don't win. There are no "Readers Digest" versions in athletics. The underachiever belongs on the sidelines, not in intercollegiate athletics. Coaches have excellent opportunities to counsel students. Many students feel freer in talking to a coach; there is less restraint involved. Coaches are constantly in situations where emotions are rubbed raw. They work with people in real-life situations — in stress, joy, defeat, frustration. They develop an empathy which makes them excellent counselors.

The Physical Education and Athletic Department complements the WPI Plan. To reiterate one of the goals, "A WPI education should develop in the student a strong degree of self confidence." We know of no better laboratory of human relationships than that which occurs on athletic fields and areas. If the coach mixes the wrong ingredient here, it can be just as damaging as mixing the wrong ingredients in a chemistry laboratory. He's teaching fair play, honesty, teamwork, and we don't expect him to teach how to cheat, how to beat the game, or how to sluff off or just get by.

In closing, a balanced, in-proper-perspective athletic program can provide so many opportunities for a student and a college and its atmosphere. Another plus is that the athletic teams provide the only contact WPI has with many outstanding colleges in New England. Further, athletics are a challenge (a constant challenge to one's self-discipline and determination), it tests one's emotions, it teaches and demands self-reliance, confidence, and teamwork. How many other courses in the college catalog could have a course description like this?

Yes, one of the best bargains at WPI is its physical education and athletic programs. Perhaps Frederick L. Houde, president of Purdue University, wrapped it all up best when he said recently: "It seems to be that in the management of the affairs of men in this society and all societies, the strain is always on the character and never on the intellect — for our knowledge is great about man and nature and society and all the things we need to know, but our ability to manage our affairs puts a strain on the character — and where is this more true than in the field of the management of intercollegiate athletics."

WHO?

The WPI Coaching Staff

All full time members of the coaching staff are accorded full WPI faculty status. Their profession is teaching and they work at it throughout the college year. Each member of the staff teaches physical education classes in addition to coaching varsity and J.V. teams in their respective sports. In addition four classroom courses for credit will be offered under the WPI Plan.

With the rest of the faculty, they share important committee responsibilities and privileges, including tenure.

Although their role as faculty members is not unique, it is not widespread in college circles. Their status does reflect the WPI attitude that the physical education and athletics program is part of the overall educational program of the college.

These brief biographical sketches give the highlights of the careers of the men who guide the athletic program throughout the year.

Bob Pritchard first appeared on the WPI campus in 1941 as an instructor and assistant football coach. He had previously been a coach at Susquehanna University from which he graduated in 1936. He also earned his master's degree at Penn State during that period.

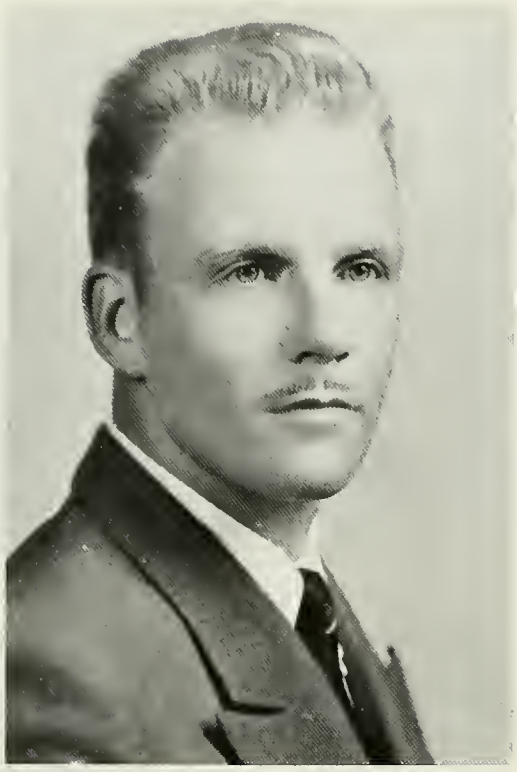
Hardly had his WPI career begun when he was called to active service in the Air Force as a physical education officer. When the war ended, he was appointed athletic director and football coach at his old high school in Kingston, Penn. However, in 1947, he accepted the invitation to return to WPI. In 1952, he succeeded the retiring Percy Carpenter as head of the department.

Bob also served as head football coach at WPI until 1966 when he reluctantly made the decision to give up the post because of the increasing administrative responsibilities in his growing department. He coached football longer than any WPI coach and won more games than any previous coach, including an undefeated team in 1954.

Any WPI athlete of the past 25 years remembers the Pritchard humor which reaches its peak at the sports banquets each year. His jokes rival the best of the professional comedians but few in his audience realize how carefully he saves those jokes from all sources throughout the year for those one-night stands.

Coach Pritchard is an athletic director who believes in sharing his experiences with his colleagues. This spirit of cooperation has brought him many honors. He is a past president of the New England Intercollegiate Athletic Association, a past executive committee member of the Eastern College Athletic Conference, past president of the Quinsigamond Regatta Association and for many years he has been chairman of the Worcester Red Cross Water Safety Committee. He is past president of the New England College Athletic Conference and was for four years member of NCAA College Committee.

He is now serving as vice president of the National College Athletic Association and serves on its policy making council. He is chairman of the NCAA's Drug Education Committee and he has written a foreword to a drug information booklet distributed this fall to 250,000 coaches throughout the country. This publication was prepared by his committee in cooperation with the U.S. Bureau of Narcotics and Dangerous Drugs. At the last annual NCAA Convention he chaired a round table discussion for all member colleges.



Alan King was born in Newcastle, England, where soccer s the national sport. After a tour in the British Army, he worked as a commercial assistant in Singapore. In 1953, he came to the United States to enter Springfield College. Although soccer was his great love, he was ineligible to play in college, having played professionally in England.

It was this experience however that brought him to WPI n 1957 and which has brought winning soccer seasons almost as a habit since. His 1965 team was undefeated, and his teams have gone on to post-season tournament play in many seasons.

He retains a slight and pleasing British accent which somehow seems a bit out of place in the New Hampshire mountains when he's coaching the WPI Ski Club team. However, his teams do as well on the slopes as they do on the soccer fields. In the spring he coaches the tennis team, which has also enjoyed some fine seasons in recent years.

Alan stills plays soccer himself as a member of the Hartford Ukranians which at press time was enjoying an undefeated season although, he added with a wry smile, 'that means two wins and five ties."

His knowledge of soccer has made him in great demand as a lecturer at soccer clinics for both high school and college teams as well as at summer soccer camps. It has also brought him a rare honor in his selection as a member of the NCAA Soccer Rules Committee where he is one of only six coaches in the country selected. Due recognition for a man whose WPI teams have won the New England college division championship four out of the past seven seasons, including the 1965 undefeated season.

The 1971 season was Associate Professor Melvin Massucco's fifth year as Head Coach at WPI. His playing days started at Arlington High School as a starter for 3 years in football, hockey and baseball. He captained the football and baseball teams his senior year. Picked on the Greater Boston All-Scholastic Teams in all three sports, and played in the Manning Bowl All-Star Game in 1943. Selected for the Eastern Mass. Interscholastic Sports Writers Association Most Valuable Player Award.

Entering the Army, he played 2 years of football and baseball in Italy; playing for the M.T.O. All-Stars in a post-season game in Nice, France.

Later entering Holy Cross, he played 3 years as starting halfback and team punter. Captained his senior year with the team finishing 8-2. For many years he held the season and career rushing record for Holy Cross.

Mel was picked by coaches to play in the North-South Shrine Game December of 1951. He was also selected to many All-New England and All-East teams and was voted as All-Catholic All-American by a board of coaches.

The Holy Cross Varsity Club elected him to the Holy Cross Athletic Hall of Fame in 1969.

He was drafted by the Chicago Cardinals of the National Football League in the Spring of 1952 but after working out with the Cardinals most of July and August, passed up pro-football and joined Charles O'Rourke at the University of Massachusetts as Freshman Coach. He is now in his 20th year of coaching – 2 years at U. Mass., 11 as an assistant at Holy Cross, and 2 as Head Coach at Holy Cross.

Merl Norcross is in his 18th season as WPI head track coach. He earned his bachelor's and master's degrees at the University of North Carolina. While in college, he served as assistant coach of football at Edenton and Chapel Hill, N.C. high schools. After graduation, he spent a year at Morresville, N.C. high school as a teacher and basketball coach.

Like Bob Pritchard, he is an alumnus of Kingston, Penn., High School and it was this connection which brought him to Pritchard's attention in 1952.

His 1963 team was undefeated. Co-captain Jack McGrath's records for the high jump and the high hurdles still stand as college records. Under his coaching, Cary Palulis, '68, won the New England 880 yard title three years straight as well as setting several other unbroken records.

Merl is a popular after-dinner speaker on the Alumni and luncheon club circuit.

While in college, Merl played halfback in both the Cotton Bowl and the Sugar Bowl in post-season games. Although track is his major interest at WPI, he also serves as assistant football coach. In his spare time, he heads the department's low-key recruiting effort to convince high school scholar-athletes that WPI can offer just what they seek in a college.

Merl was recently selected as a member of the NCAA Track and Field Rules Committee.

Charles NcNulty made his debut on the WPI campus in the uniform of a Navy Chief Petty Officer when the Navy established a V-12 unit on campus in 1943. His mellow voice exhorted the sleepy-eyed cadets to "put a little more muscle in those pushups" during crack-of-dawn calisthenics.

He had joined the Navy as a physical education instructor after graduation from Manhattan College where he had played varsity baseball and football three years. When he left the service in 1945, he took his first coaching job at LaSalle Institute in Troy, N.Y. but a year later accepted the invitation to join the WPI staff, this time as a civilian.

Charlie is the baseball coach as well as assistant football coach. He was pledged and initiated by the WPI chapter of Phi Kappa Theta fraternity and he is an active member of the Alumni Corporation which owns the local chapter house.

Although he pushed the students-turned-sailors hard during those war years, the alumni who were on campus during those hectic years remember him fondly. At its 25th reunion last June, he was the guest of honor of the Class of 1946. They all remembered the steps and Charlie called out the commands while the troops of '46 marched close order drill in the moonlight on the lawn of the Higgins estate, an area off limits during their student days.

When co-eds became part of the WPI scene, the standard physical education program did not quite meet their needs. Mrs. Paula Lantz joined the staff on a part time basis in 1969 with a free hand to develop a girls' program in keeping with the spirit of the program for men.

It was a cooperative venture from the beginning as she and the girls decided what to cover in the weekly classes. In her first class, she found only two or three girls out of 24 who could really play tennis. This became the first sport to master. Later, the girls asked to have football coach Mel Massucco give a lecture on how to watch a football game intelligently.

"Girls need an understanding of sports as much as men," says Mrs. Lantz. "Many of the lifetime sports are enjoyed equally by men and women."

The girls learn the fundamentals of tennis, soccer, field hockey, bowling, volley ball, swimming, badminton, table tennis and tumbling. There's been some resistance to modern dancing but she hasn't given up yet.

She's a graduate of Bridgewater State College and is married to Clifford Lantz, a former member of the WPI faculty now working for a consulting engineering firm.

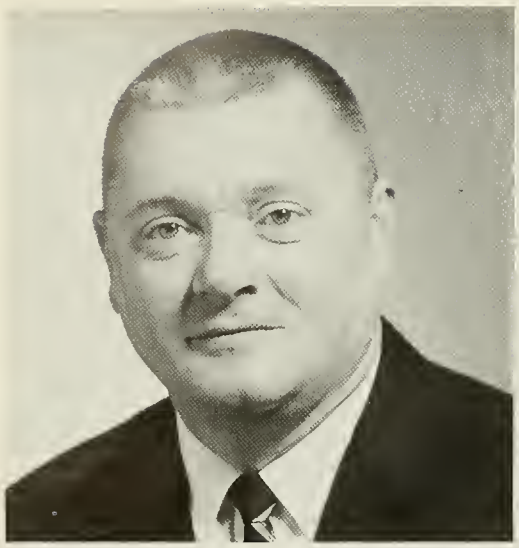
WPI isn't ready yet to field intercollegiate girls' teams but she looks forward to the day when there will be enough women athletes in a given sport to make this possible.

Swimming Coach Carl Peterson joined the WPI staff in 1968 after two years as a teacher and coach at Lewiston, Maine, High School. He received his degree at Bowdoin in 1966. He began swimming in competition in high school and was a varsity swimmer at Bowdoin.

Although developing one of the finest WPI swimming teams in recent years is his major interest professionally, he has also encouraged general recreational swimming by keeping the pool open as many hours a day as possible. With his corps of trained lifeguards, he also conducts Red Cross Water Safety courses as a certified instructor.

His 1971 team tied the best season of any swimming team in the college's history with a total of 6 wins against 2 losses.

Carl is vice president of the New England Swimming Coaches Association.



Jim Herrion added a new spirit to the basketball team when he took over as head coach in 1969. During that first year, he was still a teacher at Tantasqua Regional High School in Sturbridge. The following summer he joined the WPI faculty and assumed full time duties in the department.

He graduated from Iona College in 1950 and has earned his master's degree in graduate study at New York University and Fordham. His first position after graduation was that of teacher, coach and athletic director at Sacred Heart High School in Yonkers, N.Y. where he served 14 years. From there, he went to Pearl River, N.Y., High School to spend a year as a teacher of biology. In 1965, he was named assistant basketball coach at Holy Cross, remaining there until he resumed high school teaching at Tantasqua in 1968.

His first two seasons at WPI have produced teams with overall winning records.

The newest member of the WPI physical education faculty is Richard A. Heikkinen who was appointed an instructor July 1, 1971. He brings to the post of wrestling instructor five years of secondary school coaching experience. His first post was at Fryeburg Academy, where he served three years as physical education instructor, football and wrestling coach and for the past two years as head of the physical education department, football and wrestling coach at Kennebunk High School in Maine. He did his undergraduate work at Springfield College and also studied at the University of New Hampshire and the University of Maine.

He faces his first season as a college wrestling coach with the prospects of another good year of WPI wrestling. The team last year had its best season ever under the coaching of graduate student Lennie Polizzotto, '70, who was himself a member of several standout WPI wrestling teams as an undergraduate.

At WPI, he is also an assistant football coach and in the spring will help with the track team.

Part Time Coaches

With over 400 students participating in varsity sports, WPI relies on the services of many part time coaching assistants to help with each sport in season. These people also share in the credit for the fine showing of WPI teams:

FOOTBALL: Tom Heinold, '70, of the Heald Machine Division; Charles Murphy, a teacher in Auburn.

BASKETBALL: Kenneth Kaufman, a physical education teacher in the Worcester Public School system.

SOCCER: James MacKechnie of Norton Company; James Kaufman, a WPI post doctoral student.

WRESTLING: Leonard Polizzotto, '70, now a graduate student.

GOLF: Prof. Herbert Yankee of the Mechanical Engineering Department.

J. V. GOLF: John Gale, '70, WPI graduate student.

CROSS COUNTRY: Frank Sannella, retired supt. of schools, Oxford, Mass.

Club Sport Coaches

Some WPI intercollegiate sports are sponsored by student clubs and receive financial support from the student activities fund rather than from the Athletic Department budget. The following have active programs at this time.

FENCING: Coach, Mrs. Henrietta Beyer of Norton Co.; Faculty Advisor, Donald Kievet, assistant director of admissions

CREW: Coach, Kenneth Burns, retired Shrewsbury police chief; Faculty Advisor, Richard Olson, Mathematics Department instructor.

HOCKEY: Coach, Leonard Bowen

SKIING: Coach and Faculty Advisor, Alan King

RIFLE: Faculty Advisor, Walter Kistler, associate professor, Mechanical Engineering

THE VIEW FROM DOWN HERE

BY ALAN DION, '72

A chronicler attempting to recount the story of athletics at an engineering college might believe it germane to stick to statistics and scores. Yet to me the significance of the WPI sports program has not been the won-lost records or performances but a series of impressions left over from watching events and people. As a competitor, spectator, manager, and reporter of various Tech sports over the past few years, I've been exposed to many views of an overall picture which has been by turns both confusing and interesting.

Take, for example, the fact that WPI has an athletic program at all, let alone one which I've heard boasted of as "larger than Notre Dame's," with seventeen varsity and club team sports. As an institution devoted to disciplining minds to function in rather sedentary jobs as engineers, scientists, and businessmen, it would seem that physical advancement lies outside Tech's main objectives. Whether it was the inscrutable intentions of past administrators or the proximity of the Ivy League student-athlete ideal which is responsible for the present situation, it does remain that about a third of all WPI students compete in a sports program which is greater in scope (if not in size) than that of the Fighting Irish and many other colleges.

Consider that the WPI campus has no social center, it houses only a fraction of its students, and yet we nonetheless fill our football stands on alternate Autumn Saturdays – more often than not to see the WPI engineers lose to other undistinguished teams.

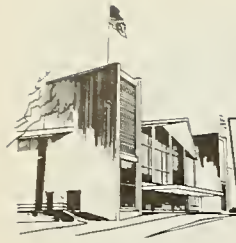
Or ponder the fact that students who may never before have seen amateur wrestling now crowd what was once an atrocious basketball court (and remains an acoustical horror) to lend their verbal mayhem to the conflicts on the mat. One can marvel at the fact that, of all those seventeen teams, one of the most successful and prestigious is the club sport of crew, which is entirely dependent upon student support. One can try to explain the case of a progressive engineering school which drops all course requirements except for a two-year physical education program, and this has sparked some student resentment.

It doesn't require very astute observation to realize that the distinctive athletic program of WPI gives rise to some interesting sports stories. Much of the uniqueness of the situation is due to the fact that the program is intended *for the students* rather than for the college. At no other institution I've seen is there so much opportunity to compete. Guys who didn't have the interest in high school (or maybe their school lacked a team) try out for sports that are new to them: crew and soccer, skiing and swimming, wrestling and fencing and perhaps even football. And because the level of competition may not be high, novices have a chance to compete at a time they may need a physical outlet.

The gym at WPI belongs not only to the jocks but to all students. Like it or not, everyone gets introduced to the place through required P.E. classes. Some get turned off by being compelled like children to exercise for their own good. Others find it a chance to try and hold on to the physical vigor they maintained in high school for a little while longer.

On a campus which lacks any real social center, the gym serves a significant purpose in providing a place to hang out in interims between classwork and homework, particularly for commuting students. This idea of providing a social focus for a decentralized campus is an important aspect of the entire athletic program at WPI. One of the rare times fraternity and non-fraternity students associate to any large degree outside the classroom is when they compete with each other in intramural sports, or when they support a WPI team against another school.

Herein lies the *raison d'etre* of the athletic program at Tech as I see it. Its purpose isn't to compel freshmen and sophomores to learn a "lifetime sport," or serve as a criterion for selecting people to fraternities or honor societies. Even the notion of providing a competitive outlet isn't that important; God knows there's enough competition in the classroom. What athletics really provides at Worcester Tech is a starting point on which to build a campus community. Sports might not be the best or only way of accomplishing this, but at WPI it's a good start.



VARSITY REVIEW

FOOTBALL (2-6)

The WPI football season ended on a disappointing note with a 22-18 loss to Norwich. The really bright spot of the season was the 26-0 upset win over Wesleyan on Homecoming Day. That day everything seemed to work.

Scores don't tell the whole story. Over eight games, the Engineers' total offense covered an average of 322 yards compared with 302 for the opponents. In the scoring column, the one that counts, WPI averaged a field goal less than the opposition. 14 interceptions and 10 of 15 fumbles lost also hurt.

Quarterback Steve Joseph and halfback Charlie Deschenes played

Football Leaders

Passing	Att.	Comp.	Int.	Net Yds.	TD's
Steve Joseph	176	75	13	955	9
Rushing	**Car.**	**Gain**	**Loss**	**Net Yds.**	**TD's**
Charlie Deschenes	115	525	12	513	1
Wayne Pitts	93	405	20	385	3
Steve Slavick	90	377	0	377	6
Receiving	**Rec.**	**Yds.**	**TD's**		
Jim Buell	42	550	4		
Wayne Pitts	23	227	5		
Punting	**Kick**	**Yds.**	**Ave.**		
Ralph Noblin	22	766	34.8		
Scoring	**TD**	**Con**	**PAT**	**FG**	**Points**
Wayne Pitts	8	1	0	0	50
Steve Slavick	6	0	0	0	36
Jim Buell	4	0	0	0	24
Bob Aubrey	0	0	16	2	22

their last season. Joseph led the offense with a total of 971 yards this season. Steve's improved passing accounted for 9 touchdowns. Deschenes was a key to the WPI running game, averaging 4.5 yards a carry. Tight end Tom Staehr and tackle co-captain Vin Colonero are the other seniors on the offensive team. The defense will lose tackle John Cuth and line backers co-captain Jeff Petry and John O'Donnell.

However, hopes springs eternal in the breast of a football coach and Mel Massucco is already looking to 1972 when a host of talent from this year's JV team (with an impressive 3-0 record) will be scrambling for the vacated spots. This year's varsity veterans will be back with a lot more experience and a little pre-season polishing should turn the 1972 team into one which may surprise a great many of the experts.

Season's Record

Opponent		*WPI Score*
UNION	28	20
BOWDOIN	35	14
MIDDLEBURY	35	17
BATES	15	31
WESLEYAN	0	26
COAST GUARD	31	23
RPI	28	21
NORWICH	22	18

HELP!

In order to complete the WPI Archives, the Gordon Library needs to find copies of the following WPI *Aftermaths and Peddlers:*

1883	1887	1905
1884	1889	1906
1885	1898	1907
1886	1904	1911

In addition, the Library would like one additional copy of those books from the following years:

1882	1896	1908
1890	1897	1943

Any alumnus or friend who can help out by supplying one of these 18 volumes will be performing an invaluable service to WPI. Contributions should be sent (carefully protected against the ravages of the mails) to:

Albert G. Anderson, Jr., Librarian
George C. Gordon Library
Worcester Polytechnic Institute
Worcester, Massachusetts 01609

SOCCER (5-5-1)

Leading Point Scorers

Player	*Goals*	*Assists*
Jack Blaisdell	12	3
Bill Gemmer	7	2
Bruce Kern	1	6
Gus Boucher	3	1

Opponent		*WPI Score*
U HARTFORD	4	1
HOLY CROSS	3	4
TUFTS	6	1
MIT	4	3
BU	6	2
LOWELL TECH	0	6
CLARK	2	5
ASSUMPTION	0	4
COAST GUARD	1	0
U MASS	2	2
AIC	0	1

The WPI booters finished the 1971 season with a 5-5-1 record. The season was a slight letdown from last year's New England College Champs, but the experience gained by this year's young team should be of valuable help when Coach King leads them on the '72 campaign.

The offensive punch will lack the goal scoring of senior standout, Jack Blaisdell, but sophomore Bill Gemmer seems to be Jack's likely successor at this role. Returning scorers will also see Gus Boucher and Bucky Kashiwa around for another year's service.

The defense will ably back up the team with standouts Steve Williams and Bill Johnson returning to aid promising goal tender Marc Frodyma. A year wiser, Tech's young squad will look forward to improving their .500 performance of this season.

CROSS COUNTRY (8-4)

Frank Sannella's Cross Country team completed this last season with a fine 8 and 4 record, one of Tech's best records in many years. And as seen with other fall sports, the promise of next year is with young, up-and-comers on the varsity squad.

Senior co-captain Mike Malone led Tech runners most of the year. The big surprises were frosh Chris Keenan and Fran O'Connell who did yeomen service behind Mike. Returning to back these frosh are juniors Dick Filippetti, Dick Stockdale and Andy Murch.

Season's Record

WPI	15	WORCESTER STATE	40	ASSUMPTION	65
MIT	23	RPI	49	WPI	54
WPI	24	WESLEYAN	35		
WPI	23	BATES	36		
TUFTS	21	WPI	37		
WPI	23	BRANDEIS	32		
WPI	30	AMHERST	40	BENTLEY	72
WILLIAMS	18½	WPI	37½		
WPI	15	TRINITY	45		

CAMPUS NOTES

WPI students were involved in a campus-wide demonstration November 12 and 13. It was a demonstration of concern for others which took the form of a marathon basketball for charity. The final score of the 24 hour game was 905 to 735 but the real winner was the Worcester Area United Appeal Fund which received the $1600 raised in the project.

The event was the brainchild of Steve Baum, '73, Bill Delphos, '74, co-chairmen of the game committee and Anthony "Tim" Longo, '72, president of the Interfraternity Council.

It was not a marathon in the sense that the same players shuffled around the court to exhaustion. The 12 WPI fraternities fielded teams which played in rotation against a variety of challengers. The opening round set the stage when the game committee wearing football jerseys and shoulder pads put up a valiant effort against a team of junior co-eds. They were followed by a team of deans from Worcester colleges who appeared in caps and gowns but quickly dispensed with the encumbering costumes.

The extra attractions really made the game memorable for the crowds in attendance. Door prizes, generously donated by local business firms, were awarded every half hour. Baked goods contributed by campus secretaries and faculty wives were sold in the refreshment stand or auctioned off. There were slave auctions in which volunteers agreed to work for the highest bidder for a few hours.

These were some of the memorable highlights: Miss Worcester County judged the Hot Pants Contest (for men only). Winner was popular math instructor Dick Olson who hadn't planned to enter until M. C. Bill Trask got the crowd to bid $21 to the fund if Ollie would allow his pants to be cut off at the knees so he would be eligible. Father Peter Scanlon, Catholic campus chaplain, later made the high bid when Ollie's shredded pants were auctioned off.

Sig Ep bought the services of Phi Kappa Theta and Delta Sigma Tau in the slave auction and ended up with the cleanest house on campus. Prof. Alvin Weiss was bought at auction by ATO and later was high bidder for the ATO "slaves". "I had to protect my interests," he said.

The most improbable door prize winner was the girl from Rio de Janeiro, Brazil, who won a Flexible Flyer sled.

For a bid of $5, Prof. Harit Majmudar did a one minute Indian Headstand in the middle of Harrington Auditorium to the delight of the crowd.

Services of WPI security officers, custodians and electricians were all donated for the game. So too were the services of professional basketball referees and guest announcers.

Among the players were teams from other Worcester colleges plus church and high schools teams. Togo Palazzi, former Holy Cross All-American basketball star and later a professional in the National Basketball Association, sparked a team of student nurses from Memorial Hospital against Sig Ep. The Officers of the ROTC unit, including a full colonel and three majors, played valiantly but were no match for the more experienced team from Phi Gam.

Almost 300 people played on the court during the game and hundreds more were on hand, even into the small hours of the morning to cheer their favorites. "In my 14 years on the campus, I've never seen a project that so many students became so deeply involved in at one time," said Dean Trask. "They are already starting to plan for next year's game." Maybe by then, Dean Trask will have his voice back after his 24 hour stint as master of ceremonies, auctioneer, and super star on the dean's team.

Reunion Roundup

Our 40th reunion was held at the Yankee Drummer in Auburn, Mass. on Friday evening, June 4, 1971. President and Mrs. Hazzard shared dinner with us. We felt honored to have our college president for at least a portion of our reunion.

The principal business of the meeting was a report by Robert Barrett, Chairman of our 50th Reunion Gift Committee. His report indicates that our class now has cash contributions in the amount of $5,105 toward this gift with $3,418 in outstanding pledges. This amount has been contributed by 25 of our 120 class members, 14 of whom have paid their pledges in full. We have reached 20 per cent of our goal in the past five years since this program was initiated at our 35th Reunion.

Most of the Class members participated in Alumni Day on the Hill on Saturday.

Those who were able to come were:

Frank H. Andrews
Robert and Noriene Barrett
Edward and Ruth Bayon
Robert and Gertrude Bumstead
Benjamin and Marion Chadwick
Edward S. and Mrs. Coe
Russell and Elizabeth Corsini
Harold and Anne Marie Cutler
Albert and Doris Demont
William and Anne Dennison
Theodore and Martha Fish
Paul and Dorothy Fittz
Henry and Lucine Friel

CLASS OF 1931

M. Dexter Gleason
Wallace and Mary Gove
Allan and Virginia Hall
Edwin and Barbara Haskell
John and Mary Hinckcliffe
Ralph Hodgkinson
Everett E. Johnson
Trescott and Natalie Larchar
Otis and Mrs. Mace
John and Ruth Maloney
Richard and June Marden
Oliver and Margaret Merrill
Edward and Hazel Rouse
Trueman L. Sanderson
George and Evelyn Smith
Herbert and Henrietta Stewart
Hurant and Anahid Tashjian
Robert and Marion Taylor
Francis and Nancy Townsend
Harry and Rita Tyler
Theodore L. Wanstall
Robert and Ormell Williamson
Charles and Elizabeth Woodward
Gustav E. Mangsen
Ben Rice
Russell and Mrs. Libby
Raymond Guenther
Frederick A. Farrar

Edward J. Bayon
Secretary

COMPLETED CAREERS

Note: Through a typographical error, Julian B. Gouse whose obituary was published in the October 1971 issue of the Journal was identified as a member of the Class of 1914. He was a member of the Class of 1944.

JAMES W. FREEMAN, '01

James W. Freeman, '01, died on June 8, 1971 in W. Hartford, Conn. He was 94.

Mr. Freeman was born in Bangor, Maine, March 7, 1877 and attended Moses Brown and Warren High Schools. He entered WPI in 1897 and was graduated in 1901 with a degree in chemistry.

Mr. Freeman was a high school teacher for seven years and in 1908 he became principal of the Noah Webster School in Hartford and was principal of the West Middle School from 1914 until his retirement in 1944.

He leaves a daughter, Miss Sarah Freeman, and a brother, Arthur W. Freeman of Chathamport, Mass.

LEWIS E. DICKINSON, '03

Lewis E. Dickinson, 88, died February 12, 1971, in Boonton, New Jersey.

Born in Whitinsville, Mass., on November 19, 1882, he attended Northbridge High School and entered WPI in 1899. An electrical engineering major, he was graduated from WPI in 1903.

He was employed for three years by the General Electric Co. Test Dept., and later by General Storage Battery Co., and Westinghouse Storage Battery Co. He retired in 1948 from Bell Laboratories, New York, after 38 years of service.

Mr. Dickinson was a member of the Telephone Pioneers of America and was on the Board of Adjusters and the Board of Assessors for Boonton, N.J.

He leaves a daughter, Mrs. Edward Baldwin of Boonton, three grandchildren and four great-grandchildren.

P. ALDEN BEAMAN, '07

P. Alden Beaman died October 7, 1971 in Worcester, Mass., at the age of 85.

Mr. Beaman was born at Princeton, Mass., on May 4, 1886. After attending Worcester Academy he entered WPI in 1903 and graduated with a BS in Mechanical Engineering in 1907.

He served as an engineer with the Odell Manufacturing Company from 1907 to 1909. He was with F. P. Sheldon & Co., for a short time and then found employment with the Willett Sears organization from 1909 to 1916. George W. Prentiss & Co. named him superintendent in 1916. In 1928 he joined the Morgan Construction Co., retiring from that company in 1958 as department manager.

Mr. Beaman was a member of the American Society of Mechanical Engineers. While in retirement in Princeton, Mass., he served as electric light commissioner and library trustee. He was also a member of the Masonic Order.

He is survived by his widow, Charlotte M. Beaman and daughter, Mrs. W. B. Flanders of Babylon, L.I., N.Y.

CLIFTON C. QUIMBY, '07

Clifton C. Quimby passed away on October 5, 1971 at the Blueberry Lane Nursing Home in Laconia, N.H.

Mr. Quimby was born in Sandwich, N.H., on February 17, 1884. He attended Worcester English High and entered WPI in 1903. After graduating from WPI in 1907 with a degree in Electrical Engineering, he accepted a position with the American Telephone & Telegraph Company, Long Lines Dept., in New York City. He remained with A. T. & T., throughout his working lifetime, until his retirement in 1950. At retirement he was general superintendent of motor vehicles and supplies.

Mr. Quimby was a member of Theta Chi Fraternity. From 1940 to 1947 he was secretary of the Selective Service Board No. 5 for Essex County, N.J. He was a member of the Sons of the American Revolution.

He is survived by his widow, Mrs. Beatrice A. Quimby.

AVERY SMITH, '08

Avery Smith died September 30, 1970, in Kenmore, New York. He was 84 at the time of his death.

Mr. Smith was born in Grafton, Mass., September 14, 1886 and attended Grafton High School. In 1904 he entered WPI and graduated in 1908 with a degree in chemistry.

He was employed as a chemist by Acheson Graphite Co., Niagara Falls, N.Y. In December, 1908, he went to work for E. I. du Pont de Nemours & Co., a career which spanned 43 years.

Mr. Smith was a member of the F. & A.M., the R.A.M. and the American Chemical Society.

JOHN WOODCOCK, '09

John Woodcock, a man who worked 39 years for American Telephone & Telegraph Co., has passed away at the age of 87. He died October 31, 1970 in Andover, N.J.

A native of Leicester, Mass., he attended Worcester South High School before entering WPI in 1904, where he majored in electrical engineering. He was a 32nd degree Mason.

PHILIP C. KNEIL, '11

Philip C. Kneil died Sept. 13, 1971 in Napa, California. He was 83.

Mr. Kneil was born in Ticonderoga, N.Y., on April 24, 1888. After graduating from Saratoga Springs High School, he entered WPI in 1907. In 1911 he received his BS degree in civil engineering.

During his lifetime he served as a draftsman for B. S. Brown; an engineer for Smith & Lovett and later for SMI Engineering. From 1918 to 1919 he was a sergeant for the U.S. Army in France. He held the positions of inspector, fire protection representative, and special agent for the Factory Insurance Association from 1919 until his retirement in 1956.

Mr. Kneil was a member of Tau Beta Pi Scholastic Honorary and the Masonic Order.

He is survived by his daughters, Mrs. Mary Sward of Napa, California and Mrs. Jacob Hotchkiss of Loudonville, N.Y.; a son, Thomas Kneil of Wichita, Kan.; a sister, Miss Caroline Kneil of Dobbs Ferry, N.Y.; and seven grandchildren.

CHARLES L. NEVENS, '12

Charles L. Nevens died May 7, 1971, in Remsen, New York at the age of 81.

Born on December 31, 1889, in Lewiston, Maine, he was graduated from Lewiston High School. He entered WPI in 1908 and received a degree in civil engineering in 1912.

He worked for three years as an inspector for Factory Insurance Association in Hartford, Connecticut. He also worked for 17 years for the Hartford Fire Insurance Co., first as an assistant superintendent-special risk department; and later as a superintendent-special risk department in the Chicago office. At the time of his retirement in 1956, Mr. Nevens was president of the General Underwriters Insurance Agency where he had worked for twenty-four years.

Mr. Nevens belonged to the National Fire Protection Association, the Unitarian Church and the Masons.

NED F. NUTTER, '13

Ned F. Nutter died February 6, 1971 in Truro, Nova Scotia, at the age of 83.

A native of Farmington, N.H., he was born on June 13, 1887 and attended Portland (Maine) High School. He received his degree from WPI in 1913 in civil engineering.

He worked as a draftsman for Chicago & Joliet Electric Co. and as an inspector for Western Union Telegraph Co.

He was a member of Alpha Tau Omega fraternity and was a registered professional engineer in Nova Scotia.

CARL F. FRITCH, '14

Carl F. Fritch, a former construction engineering executive, passed away on June 6, 1971.

He was born June 30, 1892 in Wollaston, Mass. After graduating from Attleboro High School he entered WPI in 1910. Upon receiving his BS in civil engineering in 1914 he accepted a position with the National Fireproofing Company, New York City.

His next employment was with Westinghouse, Church, & Kerr. From 1918 until 1923 he served in the U.S. Navy at the Bureau of Yards & Docks, Navy Dept., Washington, D.C. The Turner Construction Company, New York City, named him purchasing agent and project manager in 1923, positions which he held until 1946. Later he was made president of Federal Constructors, Incorporated, Chicago, Illinois. In 1950 he accepted the presidency of the E. W. Sproul Construction Company, also in Chicago. Prior to his death he was with Pepper Construction Co.

Mr. Fritch was a member of Skull and Tau Beta Pi Scholastic Honorary. He also belonged to Alpha Tau Omega Fraternity.

Among his survivors are his widow, Mrs. Ida Marble Fritch, and two sons, Robert F. Fritch of Palatine, Illinois, and CARL F. FRITCH of the Class of 1940.

EARL VAN VLIET HIGBEE, '15

Earl V. Higbee, 78, retired assistant to the general manager of Stanley Tools, division of the Stanley Works, died August 7, 1971 in Westerley, R.I. after a short illness.

A native of Northampton, Mass., he attended Northampton High School and entered WPI in 1911. He was graduated from Sheffield Scientific School of Yale University in 1915. He worked 40 years for Stanley Tools Co., beginning work on production, engineering and special management assignments for the Stanley Works Hardware division in 1920. In 1925 he was transferred to the engineering department of Stanley Tools, and later that year to a special research department, where he was supervisor for several years. He was later appointed as head of the engineering department and supervisor of maintenance and the tool room. In 1927, he became supervisor of several other factory departments and was named superintendent in 1929 and general superintendent in 1943.

During World War I, he was a second lieutenant in the Signal Corps and Motor Transport Corps, and during World War II was coordinator of Civil Defense for New Britain factories.

A member and one-time president of the Rotary Club, he was also an incorporator of New Britain General Hospital and a member of the YMCA. He had been a member and past director of the Yale Club.

He leaves his wife, Gertrude Kadue Higbee.

CARLTON R. SMITH, '15

Carlton R. Smith died June 5, 1971 in Enfield, Conn.

Born in South Hadley Falls, Mass., on Sept. 23, 1893, he was educated at Technical High, Springfield, and later attended WPI.

During his lifetime he saw service with Adams and Royton, Inc.; D. O'Connell & Sons; and the State Department in Springfield, Mass., where he was a foreman. Later he was with Charles D. Farnsworth, Inc.; Converse Carlisle Coal Co., and the Springfield Coal Co.

Mr. Smith was a member of Phi Sigma Kappa and the Masonic Order.

He is survived by his widow, Mrs. Mildred Lay Smith, and two daughters.

RALPH S. FARNUM, '16

Ralph S. Farnum died April 13, 1971 at the age of 77. Born October 4, 1893 in North Andover, he attended Johnson High School there.

He worked 30 years for U. S. Rubber Co., first in Hartford, Conn. and later in Detroit, Mich. Prior to that he worked for three years as an engineer for John and Stevens Co. in Lowell, Mass., for the Fuller Brush Co. in Hartford, and Reed and Prince Co. in Worcester. He was a sergeant in the U.S. Army and a World War I veteran.

A member of Sigma Phi Epsilon fraternity, he also belonged to the Society of Technical Safety Engineers, the National Safety Council, the American Legion, and the Masons.

THOMAS W. FARNSWORTH, '16

Thomas W. Farnsworth died in October of 1971.

He was born in Brookline, Mass., on August 23, 1891 and later attended the Tilton School, Tilton, N.H. In 1912 he entered WPI and graduated with a BS in Mechanical Engineering in 1916.

During his working life he was associated with Nordyke and Marmon Co., Indianapolis, Ind.; served from 1918 to 1920 in the U.S. Army with Near East Relief in Turkey; and was also employed by the Hartford Machine Screw Co.; Fuller Brush Co.; Sea Sled Corporation; and Bendix Aviation Corp. After retiring from Bendix in 1961 he was with M. G. Steele Co., Rome, N.Y.

Mr. Farnsworth was a member of Alpha Tau Omega, the Hartford Engineers Club, and the Society of Naval Architects and Marine Engineers.

He is survived by his wife, Mrs. Margaret Mowbray Farnsworth and two sons, Thomas Webster and Alpheus Mowbray.

WALFRED A. WALLSTEN, '16

Walfred A. Wallsten, 77, died September 10 in Worcester, Mass.

Born in Worcester on March 1, 1894, he was educated at South High School and graduated from WPI in 1916 with a degree in Civil Engineering. Early in life he was employed by the New York, New Haven & Hartford Railroad and the F. T. Ley Co.

Retiring 12 years ago, he worked 39 years as division engineer for the American Steel and Wire Division, U.S. Steel Corporation, Worcester. He was a World War I Army veteran, having served as a lieutenant in France and Germany in the Engineering Corps.

Mr. Wallsten was a member of the Worcester Tech Old Timers Club; Shrewsbury Finance Committee; and the Morning Star Lodge of Masons from which he received his 50-year medal this year. He was also a member of the Greendale Retired Men's Club of St. Petersburg, Fla., and the Connecticut Valley Shell Club.

He leaves his widow, Mrs. Hildur Park Wallsten; a son, Richard P. Wallsten of Sudbury, Mass.; two daughters, Mrs. Harry Drake of Franklin, Ohio; and Mrs. Wilbert T. Moore, Jr., Shrewsbury, Mass.; a brother, George B. Wallsten and a sister, Mrs. C. R. Lindgren, both of Holden, Mass.; and six grandchildren.

EDWARD L. KRANZ, '18

Edward L. Kranz, 75, died February 10, 1971 in Worcester, where he had lived for 45 years.

Born in Fall River, Mass., he attended B.M.C. Durfee High School there. He graduated in 1914, at which time he entered WPI. He was graduated from the school in 1918 with a degree in civil engineering.

He was a registered professional engineer in Massachusetts. For 42 years he was employed by Eastern Bridge Structural Steel Co., and for the last three years by United Structural Steel Co.

He was a member of First Baptist Church and the Kiwanis Club. He also belonged to Tau Beta Pi and Sigma Xi.

His wife, Mrs. Agnes (Janson) Kranz, died in 1956.

He leaves a son, Donald J. of Wayland, and a brother, Harold P. of Squantum.

ALDEN G. CARLSON, '19

Alden G. Carlson passed away Sept. 28, 1971 in Worcester, Mass., at the age of 73.

He was born in Worcester on July 2, 1898, attended South High School, and graduated from WPI in 1919.

Mr. Carlson was a licensed electrical engineer and had served in various capacities throughout the years with John A. Stevens; Springfield Ornamental Iron Works; Eastern Bridge; and Richard French Iron Works. In 1933 he joined Riley Stoker Corp., Worcester, and remained there as a structural engineer until his retirement. He was a second infantry lieutenant in World War I.

He was a member of Alpha Tau Omega, Tau Beta Pi, Skull, the Masonic Order, the Worcester Engineers Society, and the American Institute of Steel Construction.

ALLEN D. HAMMOND, '19

Allen D. Hammond, 74, died April 29, 1971 after a year's illness.

He was born February 23, 1897 in Brockton, Mass. In 1915 he was graduated from Fairhaven (Mass.) High School, and later that year began his studies at WPI, majoring in electrical engineering.

He served in the U.S. Army in the States and in England during World War I. During his business career he was a cotton salesman for C.O. Foster & Co., New Bedford, Mass. and later as a supervisor for John Hancock Mutual Life Insurance Co. of Boston, retiring from that company in 1957.

He was a member of Lambda Chi Alpha fraternity.

JOHN S. NASON, '21

John S. Nason passed away January 4, 1971 in Otis, Mass. He would have been 73 last February.

Born Feb. 3, 1898 in Westboro, Mass., he attended the Pawling School in N.H. before entering WPI in 1917.

He was associated with the J.S. Nason Co., of Westboro.

Mr. Nason was a member of Phi Sigma Kappa fraternity and was a Mason.

His wife, Alice Broadbent Nason, died in 1952.

EDWARD L. CAMPBELL, '22

Edward L. Campbell, executive, died July 21, 1971 in Guelph, Ontario, Canada at the age of 70.

He was born in Yonkers, N.Y., on March 24, 1901 and attended Westfield, Mass., High School. In 1922 he graduated from WPI with a BS degree in civil engineering.

From 1922 to 1926 he worked as an engineer for the Illinois Division of Highways. In 1966 he retired as President and General Manager of Armco Drainage and Metal Products of Canada, Ltd., after 40 years of service.

Mr. Campbell was a member of Lambda Chi Alpha, the Association of Professional Engineers of Ontario, and the Engineers Club of Toronto. He was past-president of the Guelph Chamber of Commerce, Guelph Rotary Club, Guelph Country Club, Junction Railway Co., and the Corrugated Metal Pipe Institute.

He is survived by his widow, Mrs. Goldie Brierton Campbell; a son, Robert E. Campbell of Toronto; a son, William L. Campbell of New York; daughter, Mrs. Malcolm MacKinnon of Short Hills, N.J.; sisters, Mrs. L. D. Carter of Charlestown, N.H. and Mrs. B. T. Richardson, Goshen, N.H.; and six grandchildren.

GEORGE S. LIEBECK, '23

George S. Liebeck died in DuPage, Ill. on August 23, 1970 at the age of 69. Born in Holyoke, Mass. on April 23, 1901, he attended High School in Springfield, Mass. and Chester (Pa.) High School. He entered WPI in 1919, graduating four years later with a degree in electrical engineering.

For thirty-seven years, Mr. Liebeck worked as an engineer with the American Telephone and Telegraph Co.

Earlier he had taught electrical engineering at the University of Missouri, the University of Minnesota and the University of Nebraska.

He was a member of Sigma Xi.

RUSSELL S. DAVENPORT, '24

It was recently reported that Russell D. Davenport passed away May 27, 1969 in Lexington, Mass., at the age of 67 years.

Born on February 18, 1902, he attended Staunton Military Academy and WPI in later years. He was self-employed as proprietor of Davenport's Garden Center & Flower Shop in Lexington.

Mr. Davenport was a member of Phi Gamma Delta.

ARTHUR G. RAND, '26

Arthur G. Rand, self-employed investment broker, died March 26, 1971 at his home in Wellesley, Mass. He was 68.

A native of Brooklyn, N.Y., he lived in Portsmouth, N.H. 34 years. Graduating from Portsmouth (New Hampshire) High School in 1922, he entered WPI that year.

In addition to ownership of the Arthur Rand Co., he had worked for the Boston Safe Deposit and Trust Co. as a teller, and for Blyth & Co., Inc. and John Calhoun Co. as a salesman.

While at WPI he was a member of Sigma Phi Epsilon fraternity.

Mr. Rand leaves a son, Dr. Arthur G., Jr. of Kingston, R.I.; two daughters, Mrs. Martha Nacke of Holyoke and Mrs. Mary C. Streb of Dobbs Ferry, N.Y.; and nine grandchildren.

HOWARD B. SMITH, '26

Howard B. Smith, once president of The Middletown Savings Bank in Conn. and a man active in civic affairs, died February 4, 1971 in Old Saybrook, Conn. after a long illness. He was 67.

Born in Boston, January 3, 1904, he attended South High School in Worcester. In 1922 he entered WPI, majoring in civil engineering.

He worked with the bank for 22 years and under his guidance the bank's assets grew from $23 million to assets exceeding $112 million at the time of his retirement in 1969. Mr. Smith began as treasurer and chief executive officer of the institution and after four years was elected president and chief executive officer, remaining in that position until his retirement in April, 1969.

He was a leader in the savings bank industry for many years, working as a member of the faculty of the graduate school of banking at Rutgers University for twelve years and later on the faculty of the graduate school of savings banking at Brown University for two years. He belonged to the Savings Banks Association of Connecticut and the National Association of Mutual Savings Banks, serving on several committees.

He lived in Middletown for 22 years, during which time he was active in numerous civic activities. He was president and director of the Northern Middlesex YMCA, general campaign chairman and president of The United Fund, and was a director of Middlesex Memorial Hospital, Middletown Industrial Development Corp. and the Rockfall Corp. He also was a vice president and secretary of the Midstate Regional Planning Agency, serving as one of the original agency officers, and was the first secretary of the Middletown Parking Authority. In 1968 he was named Outstanding Citizen by the Chamber of Commerce for his business leadership, community contributions and humanitarian efforts. He served several terms on the Republican Town Committee and was party candidate for the State Legislature in 1962.

He leaves his widow, Florence B. Smith; a son, H. Morton of Worcester; two brothers, J. Frederick of Arlington, Texas, and Leslie of Tallahassee, Fla., and three grandchildren.

VERNE K. PITFIELD, '27

Verne K. Pitfield, manager of the Newark branch of the Great Western Life Assurance Co. for 24 years, passed away this summer. He was 64.

Born July 9, 1906 in Millis, Mass., he attended Classical High School in Worcester before entering WPI in 1923. He was graduated with the class of 1927 with a degree in civil engineering.

He was a member of Theta Chi fraternity and Sigma Xi.

He leaves his wife, Rose Gallaher Pitfield; two daughters, Mrs. Peter Bayer of Berwyn, Pa. and Miss Marjorie Pitfield of Maplewood, N.J.; two sons, David of Westfield, Mass. and Philip of New York City, and five grandchildren.

EDWARD S. COURVILLE, '29

Edward S. Courville, 65, passed away September 1, 1971 in Torrington, Conn.

He was born October 27, 1905 in Cambridge, Mass., and attended North High School, Worcester. After graduating from WPI in 1929 with a degree in mechanical engineering, he went with the Hendey Machine Company for two years.

In 1931 he joined Torrington Company, retiring as plant manager of the Excelsior plant in 1970 after 40 years of service.

Mr. Courville was a member of the B. P.O.E., City Club, and Litchfield County Engineers Club.

He leaves his widow, Mrs. Irene Lemire Courville; two brothers, Charles and William Courville; a sister, Mrs. Charles Casey, all of Worcester, Mass., and several nieces and nephews.

J. HOWARD GERMAIN, '29

J. Howard Germain, vice president of Johnson & Higgins, New York City, died October 7, 1971.

He was born on August 13, 1906 in Worcester, Mass. He attended South High School and graduated from WPI in 1929 with a degree in Mechanical Engineering.

After serving as assistant manager of the Factory Insurance Association, he became associated with Johnson & Higgins in 1955, a firm for which he was an executive at the time of his death.

Mr. Germain was a member of Sigma Alpha Epsilon. He was the brother of JOHN E. GERMAIN, '38.

OLIVER B. MERRILL, '31

Oliver B. Merrill, manufacturer, passed away on September 3, 1971 at South Hampton, N.H. He was 61.

He was born Nov. 27, 1909 in Amesbury, Mass., and attended Amesbury High School. After receiving his Mechanical Engineering Degree from WPI in 1931, he was employed by the Bailey Co., where by 1946 he was advanced to the position of assistant chief engineer. At the time of his death he was president and treasurer of Warren Manufacturing Corporation, Newfields, N.H. He was also a founder of Warren Corp. which manufactures parts for automobiles.

Mr. Merrill was a member of Warren Lodge, A. F. & A. M., the South Hampton Planning Board, and Sigma Phi Epsilon. He was an antique car enthusiast, past president of the Profile Automobile League of New Hampshire, and a member of the Rolls Royce Owners Club.

Besides his wife, Margaret O'Neil Merrill, he leaves a son, John W. Merrill, South Hampton; a daughter, Miss Amanda A. Merrill, South Hampton; two sisters, Mrs. David C. Bailey, Amesbury and Mrs. William B. Walker, Northboro, Mass.; two grandsons and several nieces and nephews.

ESTUS B. HOWARD, '32

Estus B. Howard died on April 18, 1971. He was 60 years old.

Born on December 8, 1910 in Worcester, Mass., he attended Grafton, Mass., High School and WPI. After holding several jobs as a foreman in the Worcester area, he moved to Florida in the 1940's and became secretary-treasurer of the Waverly Growers Co-operative, one of the largest individual co-operatives in the United States.

FREDERICK F. WHITE, JR., '40

Frederick F. White, a research chemist with the electrochemicals department of the E. I. du Pont de Nemours Co., died March 28, 1971 in Niagara Falls, N.Y. He was 52.

A native of Aberdeen, Mississippi, he attended Aberdeen High School. He was graduated from high school in 1937 and from WPI in 1940 with a degree in electrical engineering. He later did graduate work at the University of Buffalo and Pennsylvania.

He began work for du Pont in 1945 after serving in the Army Air Corps in which he had been a pilot from 1940. Before the war he worked for Virginia Electric & Power Co. in Richmond, Va. as a distribution engineer.

He was a member of the American Institute of Electrical Engineers, the Research Society of America and the Delaware Astronomical Society. He was a brother of Alpha Tau Omega fraternity.

Surviving are his widow, Mrs. Marion White; a son, Hudson of Toronto; a daughter, Bowden Lou; a brother, Arthur H. of New Mexico; and his mother, Mrs. Judson Chastain of Grenada, Miss.

JOHN N. WHOLEAN, '44

Word has been received of the death of John N. Wholean who died at the age of 49 in Wisc. on October 17, 1970.

Born June 7, 1921, he was a native of Springfield, Mass. and graduated from Monson (Mass.) Academy before entering WPI. He was graduated from WPI in 1947 with a degree in mechanical engineering. While here, his activities included participation in intramural swimming and in the Nautical Association.

He served with the United States Naval Reserve from 1942 to 1946 and rose to the rank of Quartermaster 2/c. He was later employed by The Torrington Co., Bearing Divisions, Milwaukee, Wis.

He was a member of Phi Sigma Kappa fraternity and Skull.

RICHARD E. CAVANAUGH, '52

Richard E. Cavanaugh, vice-president in charge of contracts for San-Vel Concrete Corp. in Littleton, Mass., died Feb. 15, 1971 in Concord, Mass. after a brief illness. He was 40 years old at the time of his death.

A native of Ware, Mass., he was president of his senior class at Palmer High School in Palmer, Mass. before entering WPI in 1948. A graduate of the class of 1952, he majored in civil engineering and was a member of Phi Kappa Theta fraternity and Pi Delta Epsilon. While at WPI he joined the Tech News, the Newman Club, and the Orchestra and Band and was also a student member of the American Society of Civil Engineers.

He was a registered professional engineer in Massachusetts and Iowa and was a member of the American Society of Civil Engineers. He was a director of the American Concrete Institute, chairman of the Fire Rating Committee of the American Concrete Institute, a member of the Fire Rating Committee of the Pre-Stressed Concrete Institute, and treasurer of the Pre-Stressed Concrete Association of New England. Active in civic affairs, he was a charter member of the Littleton Rotary Club, a member of the Littleton Permanent School Building Committee and member and past chairman of the Littleton School Planning Committee.

He leaves his widow, Madeline Guenther Cavanaugh of Palmer, Mass.; two sons, Garrett T. P. who entered WPI in the fall of 1971, and Richard E. Cavanaugh, Jr., both of Littleton.

YOUR CLASS AND OTHERS

These class notes are based on information received in the Alumni Office up to November 10, 1971.

1896

CLIFFORD RAYMOND HARRIS of the Class of 1896 has reached a goal that most of us can only dream about. On October 12, 1971, "Hink" as he is known by his friends celebrated his 100th birthday.

In order to reach this goal he admits that he had a number of factors in his favor. First he was fortunate to have "chosen" long-lived grandparents. He also decided early in life not to tempt fate — he neither smokes nor drinks.

"Hink", who has been a resident of Walnut Creek, Calif., since 1950, was born in 1871 in York, Nebraska. A few years prior to his birth his father had gone to Nebraska to survey and help lay out that state and had subsequently decided to settle there.

The family moved to New Hampshire when Harris was still a youngster. Later he graduated from high school in Clinton, Mass. Following graduation he worked as a clerk for a time. He then entered Worcester Polytechnic Institute where he was awarded a degree in Mechanical Engineering in 1896.

Soon after graduation he helped to build locomotives in Philadelphia, Pa. Later he taught at WPI for several years. Worcester was then truly his home. In the following years he held a series of jobs in the Worcester area.

After his teaching stint he took a job as chief draftsman for the Standard Plunger Elevator Co. and then served as an inspector for American Car and Foundry. His next Worcester position was with Ralph Morgan, the first manufacturer of three-ton trucks. While at the latter post he suffered an injury that led to his moving to a 150-acre farm in Millbury, Mass. There for 41 years he raised peach crops and Holstein cattle.

During his Millbury residence, "Hink" served as town moderator for five years. Finally, in 1950, he sold his Millbury farm and moved to California to be nearer his family. His wife of 59 years, the former Anna Brown, died at the age of 87 in 1959.

Today he lives in his own quarters at the home of his daughter, Mrs. Bess MacKamey of Walnut Creek. His son, JOSEPH P. HARRIS, '27, lives in Los Angeles.

Harris still leads an active life. A member of his local senior citizens' club, he participated in trips to Alaska, Hawaii, and Mexico while in his 90's. Although a recent fall has left him with limited walking ability, he continues to participate in the club's meetings and card games. His fellow members often mention the many favors that their good friend "Hink" has done for them through the years.

CLIFFORD RAYMOND HARRIS at the age of 100 years has a motto that others might do well to follow. After the many changes that he has seen during his lifetime he says, "I don't worry much about things now."

1907

DONALD H. MACE is currently residing in Sarasota, Florida.

1912

HARRISON G. BROWN writes that classmate HARLAND STUART (and Mrs. Stuart) became great grandparents in July. Harl is now a deacon and member of the building committee of his church. He also keeps in good physical condition repairing concrete walks for his neighbors. . . F. HOLMAN WARING was named as honorary member of the Water Pollution Control Federation in October. The honor came in recognition of his notable career as a sanitary engineer for the State of Ohio for 35 years. A life member of the Water Pollution Control Federation, in 1960 he received the Federation's Charles Alvin Emerson Medal for outstanding service to the field.

1927

ELLSWORTH B. CARPENTER reports that he is retired but does see part-time duty as Vice President and Director of Utility Service & Maintenance, Inc. in Clayton, Mo. . . DONALD DODKIN is retired and living in Eastham, Maine.

1928

JOSEPH F. EMONDS has been ill for several months and would greatly appreciate hearing from his classmates. His address is: Laurec Manor Rest Home, Chestnut Street, Manchester, Conn. 06040. . . FREDERICK H. KNIGHT, vice president, secretary and corporate counsel of Corning Glass Works, retired on October 6th. He will continue to serve as corporation consultant. Prior to accepting his position with Corning he was a test engineer for General Electric Company and also a patent examiner with the U.S. Patent Office in Washington, D.C. A graduate of George Washington University Law School, he has been admitted to practice before the United States Courts for the District of Columbia, the Supreme Court of the United States, the U.S. Court of Customs and Patent Appeals, and the U.S. Patent Office. . . Laconia, N.H., is the address of WALTON P. LEWIS, who is now a real estate agent for Eagles Mere Realty in Gilford, N.H.

1929

Congratulations to the WAYNE S. BERRYS who have been awarded the Teddy Roosevelt award for 1971 for their long and devoted volunteer service at the Nassau County Medical Center in East Meadow, N.Y. They received the award prior to their moving to Spring Hill, Florida . . . HALBERT E. PIERCE, JR., Director of Planning for New England Power Planning, West Springfield, Mass., now lives on Bayberry Lane, in West Millbury, Mass.

1930

Having retired from his position with the Atlantic-Richfield Co., NORMAN A. BUTTERFIELD now resides in Mexico, N.Y. . . After retiring from the General Electric Co., in Bloomington, Ind., JOHN E. LAMPRON has moved to West Springfield, Mass.

1931

TRUEMAN L. SANDERSON has retired after serving 37 years with the New England Telephone and Telegraph Co.

1932

Living in Cromwell, Conn., is HENRY E. CARLSON, who is a sales associate with Kimball Associates of Hartford.

1933

FRANK F. DODGE reports that he is consulting actuary and vice president of Nelson & Warren, Inc., of Chicago. . . We have learned from J. ROY DRISCOLL that he has retired from the U.S. Steel Corp., following 37 years of service. . . Recently named manager of the Metropolitan District Commission is GILBERT U. GUSTAFSON of West Hartford, Conn. A past president of the Connecticut Society of Civil Engineers, he received the organization's H. Jackson Tippet Award in 1969 for extraordinary service to the engineering profession. He is a fellow of the American Society of Civil Engineers and author of numerous papers presented before engineering groups and service clubs. . . In September ARTHUR E. SMITH was named executive committee chairman of United Aircraft Corp.

1936

The vice president and general manager of Armour-Porter Co., Inc., JOHN A. PORTER, now makes his home in Shrewsbury, Mass. . . GEORGE P. WOOD writes that he is staff manufacturing engineer for Homelite Division-Textron, Inc., Gastonia, N.C.

1937

It was recently announced that FRANCIS S. HARVEY was one of seven persons appointed to membership on the new advisory committee for the Newman Division of the Department of Education of the Roman Catholic Diocese of Worcester. The committee will assist in developing channels of communication and cooperation in educational matters between the colleges and universities in Worcester County and the diocese. . . TALBOT F. WENTWORTH is senior vice president of the Federal Compress & Warehouse Co., in Memphis, Tenn.

1938

The newly elected chairman of the WPI Alumni Fund is RICHARD F. BURKE, JR., of Worcester. He will direct the solicitation of alumni contributions to the college during the academic year.

1939

RICHARD B. WILSON reports that he is principal at the Bill Reaser Co. in Newport Beach, Calif.

1940

The University of Connecticut at Storrs employs DR. RONALD S. BRAND as a professor of mechanical engineering and head of the department. He resides in Eastford. . . MARCUS A. RHODES, JR., won his sixth term on the Taunton, Mass., School Committee in the November election. He is assistant manager and treasurer of M. M. Rhodes & Sons, Inc., serves as a director of the United Fund, and as vice president of the Old Colony Historical Society. Mr. Rhodes is also completing his second two-year term on the Bristol-Plymouth Regional Vocational Technical School Committee.

1941

After years of service as chief engineer with the American Forces Network-Berlin, MARVIN HANDLEMAN has retired and is living in Berlin, Germany. . . The Port Authority of Allegheny County, Pittsburgh, Pa., employs LESLIE B. HARDING as assistant project engineer. Leslie currently resides in Mt. Lebanon, Pa. . . JOSEPH W. WHITAKER, JR., regional product manager for the Heald Division, Cincinnati Milacron Co., has moved to Troy, Mich.

1942

In residence at Long Beach, Calif., is PAUL C. YANKAUSKAS, who is now self-employed as a consultant.

1943

We have learned from COLIN H. HANDFORTH that he is now Director of Practice Development for Stevens, Thompson & Runyon, Portland, Oregon. . . VICTOR E. KOHMAN has been named a member of the programming staff at American Telephone and Telegraph, New York City. His home is in Verona, N.J. . . Torngren Co., Billerica, Mass., employs RAYMOND H. MATTHEWS, manager of engineers. He lives in Beverly.

1944

CHESTER W. AMBLER, JR., who resides in Doylestown, Pa., is serving as Director of Sales Engineering with the Pennsylvania-Pacific Corp. . . LEE G. CORDIER, JR., has three students in his family. His daughter, Barbara, is a junior at the University of California; son, Lee, a freshman at Arizona State University; and daughter, Carol, a junior high student in Sacramento, Calif. Lee is Manager of Engineering for Campbell Soup's West Coast plants.

1945

Dorr-Oliver, Inc., of Stamford, Conn., has a new vice president of marketing in HAROLD FLEIT who recently moved from Wisconsin to Fairfield, Conn. . . PAUL N. KOKULIS is a partner in the law firm of Cushman, Darby & Cushman, which now has its offices at 1801 K Street, N. W., Washington, D.C. . . The senior development specialist for E. I. du Pont, Heat Transfer Products, Newport, Del. is HARRY W. SANDBERG. . . It has been reported that ALBERT P. TALBOYS is again in the United States after having spent some time in Peru. He is with the Office of International Health, OS, DHEW, Washington, D.C.

1946

DR. JOHN LOTT BROWN, professor of psychology and visual science at the University of Rochester, has been appointed Director of the Center for Visual Science. The new director is a leading authority on problems in visual perception during space flights and on color vision and is the author of over 70 papers on physical, physiological, and psychological aspects of color and light. The Center which he now heads is one of the few in the world dedicated primarily to basic research and graduate and post-graduate training in the visual sciences. . . Vice president of AATO Inc., Manchester, N.H., is DONALD A. FERGUSON, who makes his home in Bedford, N.H. . . DR. ROBERT B. HAYWARD is a registered representative for DeHaven & Townsend, Crouter & Bodine, Philadelphia, Pa. He resides in Ardmore, Pa. . . HAROLD L. SCHIMMACK has moved to Alexandria, Va. He is director of the Regional Operations Division at the Health, Education and Welfare Office in Washington, D.C.

1947

VINCENT A. ZIKE has a position as product line engineer with The Stanley Works, strapping systems division, New Britain, Conn. Plainville is his home.

1948

ALFRED D. RIGGS, JR., accounts representative for Wyman Gordon Co., has moved to Auburn, Mass. . . STURGIS A. SOBIN won his first full term as Mayor of Ansonia, Conn., in November. Prior to his election the candidate said, "I know that much has been accomplished under this Republican administration, much is in progress and there is still more to do in the coming two years." Sobin was a member of the Board of Selectmen before he was elected to the Board of Aldermen in 1969. He served as chairman of the aldermanic education committee. He is a self-employed antiques dealer and restorer, is married and has five children. . . DR. ALBERT H. SOLOWAY, professor of medicinal chemistry at Northeastern University, has been awarded three separate research grants totaling $91,948. "Boron Protein for Chemo-Radiotherapy of Tumors" is his most recent grant. It was awarded by the Department of Health, Education, and Welfare, National Cancer Institute. Dr. Soloway said that he and his colleagues "are trying to make certain boron compounds that will localize in brain tumor cells without destroying normal brain tissue." The second grant, also from HEW, is entitled "Chemical Inhibitors of Plaque and Calculus". The major objective of this research is to find chemicals that could be attached to the tooth surface and would prevent accumulation of plaque and tartar. The third research project, now in its fourth year, is "Metabolic Implications in Hyperbaric Systems", the object of which is to determine how oxygen is metabolized normally. . . ELIOT Z. BLOCK serves as a technical systems engineer for Computer Sciences Canada, Ltd., Montreal, Que.

1949

Now located in San Francisco, Cal., WILLSON C. APPLEGATE is manager of Ground Safety for United Air Lines. . . Adar Associates, Inc., of Cambridge, Mass., has named FRANCIS J. BIGDA as marketing manager. Lynnfield is his home. . . LEONARD W. FISH was made vice presi-

dent at the American Gas Association, Inc., in August. He also retains his title of Director, Planning... Holden resident ROBERT N. GOWING was recently appointed director of commercial sales for the New England Electric System, Westboro, Mass. Prior to his promotion he was division sales manager in Worcester, a post he held since 1968... Employed as a supervisory aerospace engineer by the Electronic Systems Division of the U.S. Air Force, Hanscom Field, Bedford, Mass., WILLIAM A. JACQUES makes his home in Newcastle, Maine... ELZEAR J. LEMIEUX is currently manager of the vessel analytical division of M. W. Kellogg Co., Houston, Tex... DONALD R. SANDERS is associated with Scientific Components, Inc., of Linden, N.J... Vice president of Rotron, Inc., Woodstock, N.Y., is WILLIAM G. SLOANE.

1950

Serving as vice president of marketing for Southern States, Inc. (Division of Gulton Industries, Inc.), is ROBERT I. CARLSON of Decatur, Ga... GEORGE E. ENGMAN is director of engineering for Dynarad, Inc., Norwood, Mass... Vice president of Litton Industries, Inc., ROBERT F. STEWART, has moved to Simsbury, Ct.

1951

MIT employs BRUCE M. BAILEY as chief mechanical engineer in the Lab. for Nuclear Science, Cambridge, Mass... H. STUART DODGE is currently manager-product assurance division, Analog Technology Corp., Pasadena, Calif. His residence is in La Canada... Project engineer for H. H. Scott, Inc., Maynard, Mass., is AXEL W. LINDER, JR.

1952

Norton Co., Worcester, recently announced that STANLEY I. BERMAN has been elected to the new position of vice president, manufacturing, abrasive operations. The new vice president will also remain vice president, manufacturing, for Norton International Inc., a company subsidiary. His latest responsibility will be to coordinate engineering and manufacturing at more than 30 Norton abrasive facilities in the U.S. and in 16 foreign countries... JOHN EDWARD FELDSINE, JR., is an assistant professor of chemistry at Broome Community College, Binghamton, N.Y... FRANK L. FLOOD has been named chief estimator for Dravo Corporation's Eastern Construction Division. The Division which he now helps head engages in a variety of heavy construction and excavation projects including dams, bridges, dock and port facilities, and shafts and tunnels throughout the eastern portion of North America and overseas... Production manager for American Cyanamid, Linden, N.J., is STUART R. HATHAWAY... In June ALLAN J. ROWE received his master of science degree (EE) from Northeastern University's Graduate School of Engineering. Allan, a nine-year employee of Raytheon Co., Bedford, where he is principal engineer, lives in Burlington with his wife, Anna, and their SIX children... CHARLES W. THROWER is sales engineer for Ingersoll-Rand Co., Wellesley, Mass... Martin Marietta Corp., San Francisco, Cal., employs ROBERT A. MEYER, operations chief for sprint flight test.

1953

Purer New England waterways may yet become a reality if plans set in motion by VYTO L. ANDRELIUNAS prove successful. As assistant chief of operations for the New England Division U.S. Army Corps of Engineers, he has been charged with issuing permits for the discharge of industrial waste into rivers. The Corps has estimated that there are approximately 4,000 industries in the six-state region with about 2,300 being expected to file for permits under the Rivers and Harbors Act of 1899... Eckel Industries, Inc., of Cambridge, has announced the promotion of JOHN W. FLOOD to the position of Manager, Eckoustic Division. The new division manager will be responsible for coordinating the research, engineering and development, and sales of the company's line of noise control products and systems, and acoustic research and testing enclosures... KENDALL F. FORSBERG, systems engineer for the Connecticut Bank & Trust Co., has the following business address — 1 Constitution Plaza, Hartford, Ct... Residing in Sacramento, Calif., is BUD E. FRANDEN, who is a member of the technical staff of TRW Systems... JOHN E. FLYNN reports that he is General Manufacturing Superintendent for Monsanto Co., Kenilworth, N.J... The past president of the Worcester Chapter of the WPI Alumni Association, FRANCIS W. MADIGAN, JR., has been elected president of the Associated General Contractors of Massachusetts. He also serves as president of the Worcester General Building Contractors Association.

1954

CARL A. HAMMAR is Field Engineer for Pratt & Whitney Aircraft, East Hartford, Ct., and lives in Yardley, Pa... One of the executives graduated from the Motorola Executive Institute, Oracle, Arizona, was THEODORE J. JAROS, who is manager of international operations support with Motorola in Phoenix. The purpose of the one-month development course is to provide the top quality managers needed to assure long term growth for the widely diversified electronics firm... Raytheon Co., Missile Systems Division, of Bedford, Mass., employs GARY A. KUNKEL as staff engineer... WESLEY D. WHEELER is a naval architect and marine engineer as well as coordinator of technical studies employed by Plaza De La Victoria of Cadiz, Spain... WILLIAM H. HILLS of Satellite Beach, Fla., is the president of Hills Research & Development, Inc., of Melbourne.

1955

The president of Donald Grenier Associates, Inc., New York City, is DONALD J. GRENIER who resides in Carmel... RICHARD L. GOLDMAN is an engineering specialist with Philco-Ford Corp., Sierra Electronics Operation, Menlo Park, Calif... Professor ROBERT W. HOLDEN, who teaches at Grossmont College, El Cajon, Calif., makes his home in San Diego... JOHN K. HANKS works as program manager for Dynamics Research Corp., Wilmington, Mass., and makes his home in Hudson, N.H... Massachusetts Electric Company has appointed FRANCIS J. HORAN, JR., division sales manager-commercial at its Worcester operations center. The new sales manager lives in Shrewsbury, Mass... Not only is ARTHUR W. RUDMAN a mathematics teacher in the Rockland, Maine, District High School, he also serves as head football and track coach.

Born: To PROF. and MRS. ROBERT J. SCHULTZ, a son, John Joseph, on October 30, 1971. Dr. Schultz is a professor in the C. E. Department at Oregon State University, Corvallis, Oregon.

1956

Now living in Houston, Texas, JOHN F. BURNS is national accounts manager for Shell Chemical Co... ARNOLD M. HALL, vice president, engineering for Transportation Technology, Inc., Pawcatuck, Ct., has moved from Irving, Texas, to Bristol, R.I... Employed as sales manager for Homewood High & Dry Marina, Homewood, Calif., JOHN L. HYDE now lives in Tahoe City... The manager of the Memory Systems Dept. for INTEL Corp., Mountain View, Calif., is WILLIAM F. JORDAN, JR... It was recently announced that WILLIAM P. PETERSON has been elected president of Case and Company, Inc., Chicago, Illinois. Prior to becoming president of the management consulting firm he saw twelve years of experience in management information systems, financial planning, and control systems, organizational analysis, and research and engineering management systems... DR. JOHN A. TAYLOR, assistant professor of physics, Otterbein College, Westerville, Ohio, is spending a sabbatical quarter at the University of Washington. While on sabbatical he is class-testing parts three and four of his physics problems book which will be published by Addison-Wesley.

1957

CROSBY L. ADAMS has the position of traffic engineer with Wilbur Smith & Associates, Columbia, S.C. . . RICHARD G. BEDARD is now director of instructional media for the City of Worcester Public School System. . . The director of marketing for Bergman Mfg. Co., JOHN W. BRALEY, has moved from San Rafael, Calif., to Richardson, Texas. His company headquarters are currently located ir Garland. . . JOHN M. HOBAN is with Honeywell, Inc., Bala Cynwyd, Pa. . . It has been reported that ALEX C. PAPAIOANNOU has been appointed marketing manager, Food Industry, for Masoneilan International, Inc., Norwood, Mass. The new manager will be responsible for the company's marketing efforts to the food processing industries. He is an active member of the Food Industries Division, Instrument Society of America, and is currently serving as Program Chairman for the Division's national meeting in Chicago. . . COLLINS M. POMEROY is a systems planning engineer for New England Telephone in Boston.

Married: MICHAEL SPIEGEL to Miss Sara Valborg Swanberg of Sandy Hook, Conn., on August 8, 1971. Michael is self-employed and raises quarter horses and Appaloosas which he breeds, trains and shows.

1958

Microsystems International Ltd. of Ottawa, Canada, employs JOSEPH L. CHENAIL as product manager. . . DAVID S. CRIMMINS, Sc.D., has joined the Smith Kline Surgical Specialties Department of Smith Kline & French Laboratories as manager of manufacturing and product development. Prior to accepting his present position he was manager of advanced manufacturing engineering for Colt Industries and research manager for the Emhart Corporation. He also served as a faculty member at the University of Denver and Northwestern University Dental School. Among the societies to which he belongs are the American Society for Metals, American Chemical Society, American Institute for Metallurgical Engineers and American Society for Testing Materials. . . Director of Countermeasures and Electronics for Tracor Inc., Austin, Texas, is EDWARD C. FRASER, PhD. . . LCDR EDWARD L. GALAVOTTI is now stationed at Fort George G. Meade, Md. . . WILLIAM F. GESS has been promoted to manager, sonar signal processing, heavy military electronics systems at General Electric Co., Syracuse, N.Y. He resides in Liverpool. . . In August JOSEPH B. GILL was elected to the position of executive vice president by the board of directors at C.E.M. Co., Inc., Danielson, Conn. Previously he served as vice president of the sales division for Kaydon Division Keene Corp., Mich., and had held various sales and engineering positions at the Fafnir Bearing Co., New Britain, Conn. His residence is in East Greenwich, R.I. . . JACK L. GORR is presently employed as a senior systems analyst at Pratt & Whitney, East Hartford, Conn. He received his MS degree in business management from Rensselaer Polytechnic Institute, Troy, N.Y., in June of 1971. . . . Sylvania Electric Products, Needham, Mass., employs ROBERT LAPLUME as an engineering specialist. . . Serving as senior field engineer for the General Electric Co., Cordova, Ill., is ROBERT H. MACGILLIVRAY who makes his home in Bettendorf, Iowa.

JOAQUIM S. S. RIBEIRO has been elected vice president and treasurer of Jamesbury Corp., Worcester, Mass. He will be responsible for all finance and administration functions of the corporation. In Worcester he is president of the Society for the Advancement of Management, a member of the Board of Managers of the Visiting Nurse Association, and a member of the Young Businessmen's Association. He also is president of the Princeton, Mass., Taxpayers' Association and chairman of the Wachusett Regional School Planning Board. . . Ross Europa, a Division of the Ross Operating Valve Company of Detroit, Mich., has appointed WALTER VEITH to the position of Technical Director in charge of research and development, production, engineering, drafting and patent surveillance, with headquarters in the Frankfurt, Germany area.

1959

Now living in Moreland Hills, Ohio, is BURNHAM H. BAKER, who is director of planning for the Addressograph-Multigraph Corp. of Cleveland. . . CHARLES N. CONIARIS, JR., has the position of civil engineer with Saelectric Transmission Corp., New York City. He lives in Jackson Heights . . . CLIFFORD H. DAW, JR., assistant bridge engineer with the State of California Division of Highways — Bridge Department, resides in Dublin, Calif.

Married: DONALD R. FERRARI to Miss Lorraine Marie Marmonti, of Waltham, Mass., on July 17, 1971. Donald is head coach of football and baseball at Athol, Mass., High School. . . Assistant trust officer at the Broward National Bank, Fort Lauderdale, Fla., is MARSHALL P. KRUPNICK, who makes his home in Hollywood. . . ROBERT B. PALMER is a self-employed programmer-360 who works from his residence in Chatham, Mass. . . Now residing in Seekonk, Mass., ALEXANDER L. PRATT serves as project engineer for the Grinnell Corp. of Providence, R.I.

Born: To Mr. and Mrs. DOUGLAS R. WILLOUGHBY, their third child and first daughter, Janine Lynn, on July 14, 1970. Doug is a development engineer at the IBM Systems Development Laboratory, Poughkeepsie, N.Y.

1960

PAUL W. BAYLISS of Omaha, Nebraska is assistant manager, industrial engineering for Western Electric Co. . . DAVID R. GEOFFROY, senior design engineer for Coppus Engineering Co., Worcester, Mass., has recently moved from Auburn to Princeton. . . Teaching science and mathematics at Weymouth, Mass., High School is JOHN R. HAAVISTO. . . Residing in Williamsville, N.Y., CARL H. KARLSSON serves as process project engineer at the Union Carbide Corp., Tonawanda. . . SANG KI LEE is with the Patent Dept., Xerox Corp., Rochester, N.Y. . . On sabbatical until September 1972, EDWARD E. LINDBERG, director of the computer center at Western New England College, will be completing his requirements for a PhD degree in applied mechanics at the University of Connecticut. He is a member of the American Society of Mechanical Engineers, the American Society for Engineering Education, and the Analog/Hybrid Computer Educational Users Group. His residence is in Springfield, Mass., home of Western New England College.

WALTER S. LUND, owner of Lutronix, a consulting organization specializing in electronics, is also senior engineer and supervisor of engineering research in support of high-energy physics at Yale University, New Haven, Conn. . . Now located in Cockeysville, Md., ANDREW R. MILLS serves in a marketing capacity for AA1 Corp., of Baltimore. . . CHRIS F. NILSEN is associate professor of mechanical engineering at Rochester Institute of Technology, Rochester, N.Y. He lives in E. Lansing, Mich., and is on leave from RIT for two years, during which time he will work toward his PhD. . . WILLIAM R. NIMEE of Framingham, Mass., was recently promoted to the rank of Commander, USNR. He received the commission via the NROTC program at Holy Cross College, Worcester, Mass. Bill is regional sales manager for Cambridge Memories, Inc., of Newtonville. . . DR. ROBERT K. ROSENBERG is a self-employed dentist practicing in McLean, Va. . . Employed by the U.S. Army as a test engineer, THOMAS R. SOKOLOWSKI serves at Ft. Belvoir, Va. . . JOHN E. VANDERSEA is development engineer for IBM Corp., East Fishkill Facility, Hopewell Jct., N.Y. He lives in Poughkeepsie. . . Working as a product support specialist for Information Instruments, Inc., Ann Arbor, Mich., is PETER S. ZILKO who also makes his home in Ann Arbor.

1961

Born: To Mr. and Mrs. ALLAN P. SHERMAN, a second son, David M. Sher-

man, on October 6, 1970. Allan is still with Hewlett-Packard Co., Waltham, Mass. . . The 1970 recipient of the Jesse H. Neal Editorial Achievement Award was RICHARD T. DAVIS, Associate Editor of *Microwaves Magazine*. He was presented the award, given annually by the American Business Press, in recognition of his report: *ECM: Electronic Countermeasures*. . . LARRY ISRAEL and his associates have formed a new company, Visualtek, which is concerned with the manufacture and selling of closed-circuit TV systems designed to be placed on a table to help the visually handicapped to read and write. Larry is president of the firm which is located in Santa Monica, California. . . Employed by the American Tel. & Tel. Co., New York City, as assistant engineering manager is JOSEPH J. JANIK, a resident of Morristown, N.J. . . ALLEN L. JOHNSON holds the position of project engineer with the National Cash Register Co., Ithaca, N.Y. . . Sales engineer for the General Electric Co., Bloomfield, N.J., is GERALD E. KUKLEWICZ. His home is in Point Pleasant. . . The Conographic Corp., Woburn, Mass., employs FRANK MARRA as sales manager. Frank lives in Stoneham. . . THOMAS E. POSTMA is with Delco Electronics, Division of General Motors Corp., Milwaukee, Wisc. He, his wife, and their year-and-a-half old son, Michael Thomas, make Oak Creek their home. . . DAVID W. PROSSER writes that he is senior engineer for the New York State Department of Environmental Conservation, Syracuse, N.Y. . . PAUL S. SLEDZIK has been named manufacturing manager in the voltage regulator business section of General Electric's commercial distribution transformer department in Pittsfield, Mass. Prior to his appointment he was manager of shop operations in GE's speed variator department in Erie, Pa. . . Triangle Conduit & Cable Co. of New Brunswick, N.J. employs KENNETH J. VIRKUS, chief chemist. . . ROBERT R. HALE has been made engineering manager of the Hanovia Lamp Division of Compact Arc., Princeton Jct., New Jersey.

1962

LAURENT A. BEAUREGARD resides in Santa Monica, California, and is an assistant professor in the philosophy department at the University of California in Los Angeles. . . Serving as a pediatrician at Fort Benning, Ga., is DR. CHARLES F. BELANGER, JR., who lives in Columbus. . . DR. KEYREN H. COTTER, JR., has the position of chairman of the board and president of Western Financial Center, Ltd., Long Beach, California. Granada Hills is his home. . . The regional sales manager of Torin Corp., Torrington, Conn., is JERALD NORTON HAMERNICK. . . RALPH G. JOHANSON is project manager and sanitary engineer for G. Reynold Watkins (Consulting Engineers), Lexington, Ky. . . RICHARD P. LAJEUNESSE, who is employed by General Radio Co., Chicago, Ill., serves as a regional product specialist. . . KENNETH J. LaLIBERTE has moved from Pittsford, N.Y., to Medina, Ohio. . . Since receiving his MSCE at Stanford in June 1971, LCDR BRIAN J. O'CONNELL has been assigned to the Seabees at Port Hueneme, California. . . Recently transferred to Hartford, Conn., was THOMAS S. STARON, JR., who is chemical engineering supervisor for the Factory Insurance Association. His residence is in Glastonbury. . . CAPT. JOHN R. TUFANO, who received his MA degree in government and international relations from the University of Notre Dame in May of 1971, has currently been assigned to the faculty of that university's ROTC detachment. . . The Long Island Lighting Co., Hicksville, N.Y., employs WILLIAM J. TUNNEY in the capacity of nuclear physicist. Bellport is home. . . ROBERT H. YORK of Concord, California, is a soil engineer with Gribaldo Jones & Assoc. . . JOSEPH W. FITZPATRICK, JR., who resides in Wilton, Conn., is the vice president and treasurer of Wiltek Corp., which is also located in Wilton.

1963

Married: RICHARD M. ROBBINS to Miss Mary Virginia Salce of Shelton, Conn., on May 23, 1971.

CAPTAIN RICHARD B. ALLEN accepted the command of Headquarters Company, U.S. Army Garrison, Ft. Detrick, Md., on May 26, 1971. Prior to coming to Ft. Detrick he was assigned to Headquarters, 6th U.S. Army at the Presidio of San Francisco, California. . . Now residing in Liverpool, N.Y., ROBERT K. ASANOMA is employed as assistant civil engineer at the New York State Department of Transportation in Syracuse. . . STUART D. BATSTONE, director of admissions at Barrington College, Barrington, R.I., recently received the Master of Divinity degree from Trinity Evangelical Divinity School, Deerfield, Illinois. Besides his college responsibilities, he is active in community activities and has served on the Board of the New England Young People's Conference, was a founding member and general chairman of the Midwest Young Adult Conference and the Northside Chicago Young People's Council. At one time he was also youth director of the Arlington Countryside Chapel, Arlington Heights, Illinois. . . Officials of Crescent Insulated Wire & Cable Co., Inc., have announced the appointment of MARCEL H. CLAVIEN to the position of Manager of Marketing for the company's rubber and plastic product lines. The new manager's duties will include the administration of sales representatives, as well as new product planning and market development for expanded activity in his department. For the past two years Clavien was sales manager for Taft Electrosystems, Inc. . . STEPHEN D. DONAHUE, JR., is acting Council representative of the Cincinnati, Ohio, chapter of the WPI Alumni Association. . . Project manager for The Badger Co., Inc., Cambridge, Mass., is ROGER D. FLOOD of Medfield. LEE JAY GLOBERSON, who resides in South Natick, Mass., is Switching Systems Supervisor for the New England Telephone Co., Waltham. . . Wang Laboratories, New York City, has employed JOHN B. LOJKO as a salesman. John lives in Rego Park, New York. . . JOSEPH R. MANCUSO is assistant professor of management engineering at WPI. He also serves as president of Applied Marketing, Framingham, Mass. . . DAVID G. NEVERS is a Captain in the U.S. Army Corps of Engineers and is stationed in Metairie, La. . . The U.S. Army Nuclear Effects Lab., Edgewood Arsenal, Md., employs ANDRUS NILLER as a research physicist. His home is in Bel Air. . . EDWARD J. POLEWARCZYK is now engineering services manager for Dynamic Controls Corp., Windsor, Conn. . . DENNIS E. SNAY, local sales manager-commercial, at the Massachusetts Electric Co., Marlboro, resides in South Berlin. . . The city engineer of Peabody, Mass., ALAN F. TAUBERT, recently won the praise of Peabody's mayor for the preliminary work performed by his staff which resulted in a great saving of money to the city on the $6.9 million sewerage project that soon will be started with federal funds. Before coming to Peabody, Taubert was senior sanitary engineer for the Division of Water Pollution Control in the Rhode Island Health Department; engineer for the Water Resource Planning Conservation Department for the State of New York and engineer for the California Department of Water Resources.

ROBERT J. CRAIG, operations research analyst for Operations Research, Inc., Silver Spring, Md., resides in Rockville. . . Now a patent attorney with Brumbaugh, Graves, Donohue & Raymond, New York City, LESLIE J. HART received his law degree from Suffolk University Law School last June in Boston. . . JOSEPH V. BUCCIAGLIA was on assignment in Europe last summer for the U.S. Rubber Company of Naugatuck, Conn. (UniRoyal, Inc.).

1964

Married: CARLETON F. KILMER, JR., to Miss Faith Alison Crampton of Natick, Mass., on May 22, 1971. Carleton is a management consultant for Arthur Anderson Co. of Boston. . . JOHN T. O'KEEFE to Miss Margaret Jane Lynch of East Weymouth, Mass., on June 13, 1971. John is a manager-accounting for the General Electric Co., in West Lynn.

Born: to Captain and Mrs. FREDERICK H. SIFF, a daughter, on July 14, 1971. Capt. Siff is now an assistant professor of computer analysis at the U.S. Military Academy, West Point, N.Y.

DR. PAUL G. AMAZEEN, who received his doctorate in philosophy of electrical engineering at WPI in June, is now an associate of Vita Co., a company which has developed a prototype of a heart-monitoring machine currently in use at Peter Bent Brigham Hospital, Boston. Previously Dr. Amazeen was an instructor at WPI. . . Serving in Saigon as a market analyst for Pacific Architects & Engineers, Inc., of San Francisco, Calif., is PETER BAKER. . . JOHN D. CAMERA is a general contractor with the Camera Construction Co., West Hartford, Conn. . . RICHARD C. CARLE writes that he is computer analyst for the Space Division of General Electric Co., Riverdale, Md., and is working on his Master of Engineering degee at Penn. State. . . One of the principal speakers at the 10th annual Abrasives Conference held in Boston in June was RICHARD C. DELONG, senior product engineer, AVCO Bay State Abrasives Division, Westboro, Mass. The speaker's topic was "Conditioning Capabilities — Billet and Slab Grinding". He specializes in abrasive grinding wheels for foundry and steel mill applications at AVCO Bay State. . . MIT's Lincoln Laboratory, Lexington, Mass., employs DR. VICTOR S. DOLAT, physicist. . . Coast Guard LT. RICHARD F. HEALING recently participated in the rescue of three survivors from a plane crash in New Haven, Conn. He and other members of his reserve unit served as guards at the site of the crash which took place 4,000 feet short of the runway near New Haven. . . MAJOR DAVID Y. HEALY is an instructor pilot in the U.S.M.C., Meridian, Miss. . . Stanford Law School, Calif., awarded a degree of Doctor of Jurisprudence to ALFRED H. HEMINGWAY, JR., in June. He has accepted a position with a law firm in New York City. . . GEORGE L. KLANDER is personnel director at North Charles General Hospital, Baltimore, Md. . . CAPTAIN CLIFFORD M. MacDONALD is employed by Drexel University, Philadelphia, Pa., as an assistant professor of military science. . . Teaching science at Dighton-Rehoboth Regional High School, North Dighton, Mass., is DAVID D. McCAFFREY of Swansea. . . CAPTAIN STEPHEN C. NOBLE, who serves at NASA-Ames Research Ctr., Calif., resides in Sunnyvale. . . ALFRED R. POTVIN is employed by the University of Texas, Arlington, Texas, as an associate professor of bioengineering. Currently finishing his PhD requirements in bioengineering, he recently received his MS in bioengineering as well as his MS in Psychology. . . The position of staff engineer at MIT Lincoln Laboratory is held by STEVEN B. SACCO, Norwell, Mass. . . Having completed the requirements for a master of science degree in nuclear engineering, FREDERIC C. SCOFIELD now holds the position of staff engineer with the Omaha, Neb., Public Power District. Presently he is working on the technical supervision staff for the Fort Calhoun Nuclear Power Station which is under construction by the Power District. . . DR. DAVID T. SIGNORI, JR., serves as a research staff member at the Institute for Defense Analysis in Arlington, Va. . . MASON H. SOMERVILLE writes that he holds the post of senior engineer for Westinghouse-Bettis Atomic Power Lab., West Mifflin, Pa. . . Residing in Mountain View, Calif., GERALD ERNEST TAMMI is manager of product development, for the Digital Integrated Circuits Division of Fairchild Semiconductor, Palo Alto. . . ROBERT F. WHITE reports that he is a digital systems engineer for BD-Spear Medical Systems which is located in Waltham, Mass.

1965

Married: ROBERT A. JUCKINS to Miss Helen A. O'Byrne of Worcester, Mass., on June 19, 1971. Robert is a mechanical engineer at Wyman-Gordon Co., North Grafton.

Born: to Dr. and Mrs. JOHN T. WILSON, a daughter, Paige Anne, May 12, 1971. Dr. Wilson is a structural engineer with Paul J. Ford, Columbus, Ohio.

ALEXANDER B. CAMPBELL II is manager central region, special systems support, for Digital Equipment Corp., Northbrook, Ill. . . LEE A. CHOUINARD reports that he has been transferred from American Oil Company's Texas City Refinery to the research and development department of Amoco Chemicals Corp., Whiting, Indiana. . . Systems engineer for Singer-General Precision-Link Division, Houston, Texas, is DAVID B. COOLEY. . . GARRETT H. DeVLIEG, employed as an engineer by Boeing Company, Renton, Washington, resides in Bellevue. . . Living in Palo Alto, Calif., is JAMES F. FEE who serves as an application engineer for Teradyne. . . RICHARD C. FORTIER is a full time doctoral student in applied mechanics at Northeastern University, Boston, Mass. . . JAMES E. FRAPPIER is with The Badger Co., Inc., Worcester, Mass. . . It was recently announced that JOHN P. IANNOTTI has been promoted to systems analyst in Division Operations Administration at the Pennsylvania Power & Light Co., Allentown, Pa. John, an industrial sales engineer, started with PP & L in Scranton, in 1965. He is a member of the Industrial Management Club, the Hazleton Jaycees and is a commissioner for the Boy Scouts of America Council, Hazleton. . . Assistant manager for the Tibon Hard Chrome Co., Batavia, N.Y., is ROBERT H. JACOBY. . . IBM Corp., Hamden, Conn., employs SIDNEY S. KLEIN, marketing representative. Sidney resides in Orange, Conn. . . CLINTON F. KUCERA, JR., serves as industrial engineer in the Large Steam Turbine Dept. of the General Electric Co., Schenectady, N.Y. . . PATRICK T. MORAN is a marketing representative for IBM, Chicago, Illinois. . . The president of Phase-R Corporation, S. EDWARD NEISTER, resides in Center Barnstead, N.H. His company is located in Durham. . . THOMAS E. PEASE is employed by Con. Edison of New York City as an oceanographer. Project coordination for hydraulic modeling at Alden Research Laboratories (for Con. Edison) is his major responsibility . . . CAPTAIN JOHN M. PORTER serves as staff chemical officer for the Theater Army Support Command for the U.S. Army in Europe. . . In June DAVID M. SCHWABER received his PhD from the University of Akron's department of Polymer Science in Ohio. Dr. Schwaber is employed at the Monarch Rubber Company, Inc., in Baltimore, Md. . . Studying as a graduate student in computer science at the University of Connecticut, is RONALD R. SCHULTZ who lives in New Britain. . . HOWARD SHERRY serves on the technical staff of Mitre Corp., McLean, Va. His home is in Fairfax. . . The Factory Insurance Association of Houston, Texas, employs OJARS M. SILARAJS, chemical engineer. . . Field service representative, ALFRED G. SYMONDS, has been transferred by General Electric Co., Ordnance Systems from Pittsfield, Mass., to Newport News, Va. . . DEAN K. WHITE is an engineer for Alden Research Laboratories, WPI.

1966

Married: GARY M. ANDERSON to Miss Barbara Ruth Brinkmann of Allston, Mass., on August 14, 1971. Gary is mechanical engineer at Metcalf & Eddy, Inc., Boston. . . STEPHEN E. ANDERSON to Miss Frances Ellen Opalach of Hartford, Conn., on August 7, 1971. Stephen is employed as project engineer with Lee Co. in Westbrook. . . LT. JOHN B. TATA to Miss Iris A. Villa of Seattle, Washington, on August 8, 1971. Lt. Tata is currently serving as an instructor of navigation at the U.S. Naval Academy, Annapolis, Md. . . ROBERT D. WILSON to Miss Kathleen Rogers of Millbury, Mass., on August 8, 1971. Robert is a graduate student in the mechanical engineering department at WPI.

Born: To Mr. and Mrs. JOHN H. CAROSELLA, a son, David Burton, on August 2, 1970. John is employed by Delco Electronics Division, General Motors Corporation, Milwaukee, Wisconsin, as senior project engineer. . . To Mr. and Mrs. RONALD C. HAYDEN, a daughter, Margaret Elizabeth, on September 16, 1971. Ronald is

employed as a sales engineer with Foxboro Co. in Baltimore, Md. . . To Dr. and Mrs. ROBERT P. KOKERNAK, a daughter, Christine, in May of 1971. Dr. Kokernak is assistant professor of engineering at Mount Wachusett Community College, Gardner, Mass.

JAY J. BOTOP is studying for a BS in business administration as well as his MBA at the University of Alabama, Birmingham. . . Self-employed as a management consultant is J. WILLIAM BOWEN who received his MBA from Harvard recently. He resides in Rockville Center, New York. . . CAPTAIN HOWARD J. BRALEY is stationed at the USAF Eastern Test Range, Cape Kennedy Air Force Station, Fla. . . The Diesel Construction Co., New York City, has employed SIGMUND S. DICKER, project manager. Sig. resides in Ronkonkoma. . . LT. EUGENE R. DIONNE serves as chief subsystem engineer at Wright-Patterson AFB in Ohio. . . WILLIAM F. ELLIOTT has been named director of admissions at Carnegie-Mellon University, Pittsburgh, Pa. Prior to his becoming associate director in September of 1970, Bill was assistant director of admissions at WPI for four years. He has an MA in guidance and counseling from Clark University, Worcester, and is a member of the National Association of College Admissions Counselors. . . Serving as a member of the technical staff for Bell Telephone Laboratories, Whippany, N.J., is STEPHEN J. FORMICA who lives in Stanhope. . . CAPTAIN CAMERON W. HYDE was recently awarded the U.S. Air Force Commendation Medal at Kirtland AFB, New Mexico. Captain Hyde distinguished himself by meritorious service as a project officer in the nuclear safety division, Air Force weapons laboratory at Kirtland. According to the citation, his outstanding professional skill, knowledge and leadership aided immeasurably in identifying and solving problems in the field of nuclear safety. . . The Public Service Electric & Gas Co. of Newark, N.J., has employed PETER J. KUDLESS as an engineer in the gas engineering department. . . RONALD I. LONGWELL is a maintenance and renewal engineer in the generator department of the General Electric Co., Schenectady, N.Y. . . JAMES A. MARONEY holds the dual positions of president and treasurer of Francis H. Maroney, Inc., which is located in Haverhill, Mass. . . Studying for his PhD in behavorial science at Nova University, Ft. Lauderdale, Fla., is DENNIS D. MURPHY. . . RONALD F. NAVENTI is with Stone & Webster Engineering in Boston, Mass. . . GERALD J. PARKER is employed as a chemical engineer by the Environmental Protection Agency, Office of Air Programs, Bureau of Stationary Source Control, Division of Compliance in Durham, N.C. . . American International College, Springfield, Mass., has employed FRANK K. PFEIFFER, JR., as a visiting lecturer in finance. Frank, who was an instructor at Bentley College last year, expects to receive his doctorate in business administration from the University of Massachusetts in January of 1972. . . RICHARD J. PIASECKI is now project manager for Karl Koch Erecting Co., Carteret, N.J. . . Employed by Remington Rand OMD Division of Sperry Rand Corp., RONALD F. PICHIERRI works as project engineer for company headquarters in Blue Bell, Pa., and resides in Lansdale. . . MICHAEL T. PORTANOVA is a graduate student in the economics department of the University of Massachusetts, Amherst, Mass. . . Office engineer for EBASCO Services, Inc., Sioux City, Iowa, is JOHN M. SMITH, a resident of Sergeant Bluff. . . Hooker Chemical Corp., Niagara Falls, N.Y., employs EARL C. SPARKS III, chemical engineer. . . CAPTAIN JOHN A. STOCKHAUS is with the U.S. Army Engineers Corps, Ft. Belvoir, Va. . . DR. DOUGLAS L. VIZARD has the position of Postdoctoral Fellow in the physics department of the M.D. Anderson Hospital and Tumor Institute located in Houston, Texas. . . Computer systems engineer for RCA, Honolulu, Hawaii, is DAVID ERNEST WILSON. . . EUGENE H. WILUSZ teaches chemistry at New Bedford High School, New Bedford, Mass. He is also PhD candidate in polymer science and engineering at the University of Massachusetts, Amherst.

1967

Married: EDWARD J. BOTWICK to Miss Bonnie Lee Miller of Woodbridge, Conn., on July 11, 1971. Edward, who is a process development engineer for Loctite Corp., Newington, also attends the University of Connecticut Law School, Night Division. . . DEAN W. SCHOENFELD to Miss Elizabeth Orene Vaughan of Bartow, Fla., on July 3, 1971. Dean is a graduate assistant in the department of electrical engineering at WPI where he is a candidate for his master's degree in electrical engineering.

DR. STEPHEN R. ALPERT, who recently earned his PhD in mathematics from Lehigh University in Pennsylvania, has been employed as an assistant professor in the computer science department at WPI. . . Optical engineer for Raytheon Co., Bedford, Mass., is WARREN L. CLARK, who resides in Billerica. . . MICHAEL F. FLOOD is a postgraduate student at Kent State University, Kent, Ohio. . . Employed as an assistant professor of electrical engineering at Southeastern Massachusetts University, North Dartmouth, is DR. LEE EDWARD ESTES, a resident of Mattapoisett. . . JOHN E. HITCHCOCK is an estimator with Dunlop & Johnston, Inc., Cleveland, Ohio . . . 1st LT. FRANK T. JODAITIS has been installed as commanding officer of Company 8, 181st Engineer Batallion, Webster, Mass., National Guard unit according to information released in July of 1971. He is also employed as a civil engineer with Metcalf & Eddy, Engineers, of Boston. . . Project engineer for Monsanto Co., Indian Orchard, Mass., is DONALD G. LUTZ of West Springfield. . . FRANK D. MANTER is with the Jackson & Moreland Division, United Engineers & Constructors, Inc., Boston, Mass. . . Betz Labs, Inc., Trevose, Pa., employs WILLIAM O. MESSER, technical specialist. . . JAMES P. O'ROURKE teaches in the engineering department at Worcester Junior College. He received his MS from WPI in 1971. . . MUKUNDRAY N. PATEL is with Combustion Engineering, Overseas, Inc., located in Andhra Pradesh, India. . . Employed by the General Motors Tech. Center, Warren, Mich., as a research chemist, NOEL M. POTTER makes his home in Sterling Heights. . . ALAN H. SUYDAM tests and evaluates helicopter propulsion and weapons systems for the Navy and Marine Corps at the Air Test Center in Patuxent River, Md. . . Texas Instruments, Inc., employs ROBERT CARLTON YOUNG as a field sales engineer in Chicago, Ill. . . WAYNE T. WIRTANEN is an engineering assistant with Metcalf & Eddy, Inc., Boston, Mass. He lives in Natick. . . PETER M. HERRON is with Hughes Aircraft Co., Denver, Colo.

1968

Married: DONALD C. ALDRICH to Miss Lois Ann Toothaker of Winchendon, Mass., on June 12, 1971. Donald is studying for his doctorate in chemical engineering at Massachusetts Institute of Technology, Cambridge. . . COBB S. GOFF to Miss Elizabeth Anne Hubbard of East Brunswick, N.J., on July 17, 1971. ROBERT TEMPLIN and DOUGLAS FERRY ushered at the wedding. Cobb has been recently assigned by the Eastman Kodak Company to the photographic technology division, Kodak Park, Rochester, N.Y. He is a photographic engineer and resides in Spencerport. . . PAUL D. MATUKAITIS to Miss Patricia E. Cournoyer of Worcester, Mass., on July 24, 1971. Operating supervisor at Monsanto Co., Springfield, Paul attends the evening division of Western New England College, where his major is law. . . DR. MICHAEL R. PAIGE to Miss Paula Winsor Davis of Danville, Illinois, on June 27, 1971. Dr. Paige is presently employed on the technical staff of General Research Corporation, Santa Barbara, California. . . FREDERICK W. WHITE to Miss Karen Jean Nichols of Framingham, Mass., on August 22, 1971. Frederick is employed by the U.S. Navy at the U.S. Navy Underwater Systems Center in New London, Conn.

Born: To Mr. and Mrs. ROBERT A. FALCIANI, a daughter, Lisa Ann, on June 2, 1971. Robert serves as assistant manager-industrial systems for Babcock & Wilcox Co., Barberton, Ohio. He resides in Canton . . . To Mr. and Mrs. ROBERT C. GOSLING a daughter, Jennifa Ann, on September 1, 1971. Bob is with the Public Service of New Hampshire in Manchester. . . To Mr. and Mrs. EDWARD M. HARPER, a daughter, Melissa, on June 6, 1971. Edward is employed as a design engineer for the Harper Buffing Machine Co., East Hartford, Conn. . . To Mr. and Mrs. RAYMOND F. RACINE, a son, Darren Michael, on January 15, 1971. Raymond has been assigned to the rotor design section of G. E.'s mechanical drive turbine department, Fitchburg, Mass. . . DAVID E. ANDERSEN is a technical representative at E. I. du Pont de Nemours & Co., Inc., Philadelphia and makes his home in West Chester. . . Universal Engineering Corp., Boston, Mass., has employed ARNOLD J. ANTAK as a community planner. Arnie lives in Waltham. . . ROBERT E. BALMAT has been named a financial analyst for North American Rockwell Corp., Autonetics Division, located in Anaheim, California. . . CAPTAIN IVAN V. BEGGS has been transferred from Vietnam and expects to be stationed in Germany soon. . . Design engineer at Garrett Corp. — AiResearch Mfg. Co., is WILLIAM R. BELISLE of Long Beach, Calif. . . A. LEONARD BERGQUIST is employed as a field service representative for Beckman Instruments, Inc., Wakefield, Mass. . . A resident of Framingham, Mass., EDWARD H. BORGESON, serves as an engineer-group leader at Raytheon Co. of Wayland. . . VICTOR V. CALABRETTA, JR., is presently a graduate assistant at WPI. . . State Mutual of America recently announced that RICHARD L. COLLINS has been appointed actuarial associate, actuarial planning. Richard makes his home in Shrewsbury. In 1971 he received his master's degree in actuarial science from Northeastern University, Boston. . . NORMAN W. COOK is a partner in Cook Builders' Supply Co., West Springfield, Mass. . . The Naval Ordnance Station, Indian Head, Md., employs GREGORY C. COX, chemical engineer. . . DAVID P. CROCKETT serves as a sales engineering trainee for Buffalo Forge Company, Buffalo, N.Y. . . Babson College, Babson Park, Mass., has among its MBA students, JEFFREY A. DECKER, who resides in Auburndale. . . ROBERT R. DEMERS is an anesthesia research assistant at Rhode Island Hospital, Providence, R.I. . . Serving as research engineer at Monsanto Co., Indian Orchard, Mass., is ROBERT N. GARLICK who makes his home in East Longmeadow. . . GEOFFREY L. HARTUNG is an engineer with UniRoyal Chemical, Baton Rouge, La. . . The U.S. Naval Underwater Systems Center, New London, Conn., employs WILLIAM A. HAWKINS, electronics engineer. . . JOSEPH J. KASABULA writes that he is currently a chemist (supervisor of special analysis systems) for Uniroyal Chemical, Division of Uniroyal Inc., Naugatuck, Conn. . . Holingsworth & Vose Co., West Groton, Mass., has given DOUGLAS W. KLAUBER the position of research chemist. . . JOHN J. KOKOSZKA, a lieutenant in the U.S. Army, is employed by DCSLOG-Ammo, HQ.-USARV, APO, San Francisco, Calif. . . A physicist for Ion Physics Corp., S. Bedford St., Burlington, Mass., is ROBERT A. LOWELL, who makes his home in Lynn. . . JOHN E. LUNNEY serves as a field service representative for General Electric Co., Ordnance Systems, Pittsfield, Mass. His residence is in Newport News, Va. . . Currently an instructor at the U.S. Army Engineer School, Fort Belvoir, Va., is WALTER C. LYNICK of Uncasville, Conn.

Born: To 1/Lt. and Mrs. ISRAEL MAC, a daughter, Mellissa Rebecca, on October 9, 1970. Lt. Mac is an instructor at the U.S. Army Engineer School, Ft. Belvoir, Va. . . JOHN D. MacDOUGALL, JR., serves as a mechanical engineer at Lipe-Rollway Corp., Research Division, Syracuse, N.Y. . . WILLIAM J. McCANN, JR., who was promoted to Captain, USA, in June, is presently in Vietnam with the office of the assistant chief of staff for maintenance, Danang Support Command. He and Mrs. McCann have a son, William J. McCann III, who was born on March 25, 1971. . . The U.S. Naval Underwater Systems Center, Newport, R.I., employs STEVEN MEDOFF, electronics engineer. . . JOHN J. ORCIUCH works as a process engineer at Uniroyal, Inc., Naugatuck, Conn. . . Research & development engineer for General Dynamics Electric Boat Division, Groton, Conn., is ALLEN PALMER. . . JAMES M. PALMER has been employed as team manager for Procter & Gamble, Foods Division, Jackson, Tenn. . . Serving as an Aircraft Maintenance Officer at Whiteman AFB, Missouri, is 1st/Lt. THOMAS J. PERARO whose home address is in Enfield, Conn. . . RICHARD G. PERREAULT, who has been stationed in Germany for over two years, was promoted to Captain in April 1971. He writes that he would appreciate hearing from his former classmates. His address is: HHC 10th Engineer Battalion, Kitzinger, Germany, APO New York, N.Y., 09701. (Capt. R. G. Perreault 045361824). . . The U.S. Army Natick Labs. has employed RONALD A. PORTER, physicist. . . ROGER W. PRYOR recently received his MS degree at The Pennsylvania State University, University Park, Pa. . . STEPHEN M. PYTKA has employment as a development engineer with Western Electric Co., Kwajalein Atoll, in the Marshall Islands. . . Stationed in England and working as a weather forecaster is LT. RONALD D. REHKAMP who has been assigned to Bentwaters RAF Station. Lt. Rehkamp is in the USAF. . . It was recently announced that BERNARD J. ROMANIK was promoted to Army Captain near Butzbach, Germany. Capt. Romanik is the supply officer for the 16th signal battalion's headquarters located in the Butzbach area . . . RICHARD S. SADOWSKI works as a mechanical engineer at Riley Stoker Corp., Worcester, Mass. . . Stone & Webster Engineering Corp. has transferred DAVID R. SPEIRS from Boston to St. Gabriel, La. He resides in Baton Rouge. . . J. KEVIN SULLIVAN is a MBA student at the University of California at Berkeley. . . TELCOM, Inc., of McLean, Va., employs GEOFFREY P. TAMULONIS, engineer. Geoffrey received his MSEE from New York University in 1971. . . MICHAEL J. TRUE is a process and product development engineer at Uniroyal Chemical, Naugatuck, Conn. . . Quality control engineer for General Electric Co., Fitchburg, Mass., is RICHARD B. VAUGHN, who resides in Leominister.

The following names were inadvertently left off the 1970-71 Alumni Fund Report in the last issue

ADDITIONAL PRESIDENT'S CLUB CONTRIBUTORS:

Charles C. Bonin, '38
William A. Schuermann, '21

ADDITIONAL JOHN BOYNTON CLUB CONTRIBUTOR:

Alan F. Swenson, '49

ADDITIONAL CONTRIBUTORS

Clifford Broker, '29
Arthur E. Nichols, Jr., '54
Harvey L. Pastan, '49
Wilford A. Sutthill, '29

THE ALUMNI BELOW SHOULD HAVE BEEN LISTED AS CONTINUOUS CONTRIBUTORS TO THE ALUMNI FUND:

*Gordon H. Raymond, '42
*Harvey L. Pastan, '49
*William A. Schuermann, '21
*Allen R. Deschene, '38

MORGAN CONSTRUCTION CO.

ENGINEERS & MANUFACTURERS

WORCESTER, MASSACHUSETTS 01605

1969

Married: CAMERON P. BOYD to Miss Judith Ann Michael of Manchester, N.H., on September 5, 1971. Cameron teaches in the Haverhill, Mass., school system... JAMES W. HAURY to Miss Kathleen Alane Wood of Ayer, Mass., on July 17, 1971. James is employed by Farrel Co., Ansonia, Conn... STEVEN A. HUNTER to Miss Martha J. Fuller of Worcester, Mass. on August 14, 1971. Steven is a candidate for his master's degree in mechanical engineering at WPI... MARK H. LePAIN to Miss Cheryl Pamela Turturro of Danvers, Mass., on August 29, 1971. Mark, a former employee of the Westinghouse Corp. in Washington, D.C., is stationed with the Army on Long Island... RICHARD H. McCUE, JR., to Miss Susan M. Roling of Dubuque, Iowa, on May 30, 1971. Richard serves as a process engineer at Stone & Webster Engineering Corp., Boston, Mass... RICHARD S. SMITH to Miss Patricia Ann Cusson of Worcester, Mass., on August 7, 1971. Richard is a mechanical engineer at Xerox Corp., in Webster, N.Y... DAVID A. ZLOTEK to Miss Nancy Carol Dipersia of Worcester on June 26, 1971. David is a graduate teaching assistant at Purdue University, Lafayette, Ind., where he is enrolled in the PhD program in electrical engineering.

Born: To Mr. and Mrs. RONALD GERALD ROBERTS, a son, Jason Michael, on April 3, 1971. The new father is a planning engineer with Western Electric Co., North Andover, Mass.

Little Falls Central School, Little Falls, N.Y., employs RICHARD D. ALPERT as an instructor in mathematics and computer science... 2/LT. WARREN L. ANDERSON has been transferred from USAF, Reese AFB, Texas, to Mather Air Force Base, Sacramento, Calif., where he serves as a pilot... JEFFREY C. BERNARD is a graduate student at the University of Massachusetts, Amherst... The U.S. Army Corps of Engineers employs RICHARD C. CARLSON, civil engineer, Waltham, Mass... Down in Venezuela, South America is RODNEY A. DAHLSTROM who is a process engineer for the Orinoco Mining Co... RALPH J. ESCHBORN II has an engineering position in the pigments department of E. I. du Pont de Nemours & Co., Edge Moor, Del... The Naval Civil Engineering Laboratory, Port Hueneme, Calif., employs RICHARD H. GURSKE as a sanitary engineer... DONALD G. JOHNSON is director of camping for the New England Synod Lutheran Church in America, Camp Calumet Lutheran in West Ossipee, N.H... Serving as assistant bridge engineer for the State of California — Division of Highways, Sacramento, is CHRISTOPHER J. MASKLEE who resides in Panorama City... Safeguards Engineer for G. E.'s Knolls Atomic Power Lab., Schenectady, N.Y. is ANDREW T. PERREAULT... E. I. du Pont-Eichem Vinyls employs ROBERT J. ROSE, task force engineer of Houston, Texas... JAMES V. ROSSI holds the position of marine engineer with General Dynamics, Quincy, Mass... An East Providence, R.I., resident, JOHN J. SZOSTEK, is an associate production engineer for New England Power Co., Somerset, Mass... JOHN S. THOMPSON, JR., was awarded his MBA from Harvard University in June 1971. He is now a Lieutenant in the U.S. Army... B. LEE TUTTLE is a Fellow at Penn. State University, University Park, Pa.

1970

Married: CHARLES E. BASNER and Miss Dawn Lucille Oakes of Lockport, N.Y., on Sept. 4, 1971. The couple will be living in Sunnyvale, Calif., where the groom is completing his training program with the Department of Transportation with the Federal Government... HARRIS C. HOWLAND to Miss Elizabeth Herrick Shea of Beverly Farms, Mass., on September 11, 1971. Harris is field engineer for the General Electric Co., Baltimore, Md... LT. JEFFREY C. MANTY to Miss Christine Marie

STATEMENT OF OWNERSHIP, MANAGEMENT AND CIRCULATION

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A. Total no. copies printed (Net press run).	12,000	13,500
B. Paid circulation. 1. Sales through dealers and carriers, street vendors and counter sales.		
2. Mail subscriptions.	1	1
C. Total paid circulation.	1	1
D. Free distribution (including samples) by mail, carrier or other means.	11,151	11,608
E. Total distribution (Sum of C and D).	11,152	11,609
F. Office use, left-over, unaccounted, spoiled after printing.	848	1,891
G. Total (Sum of E & F — should equal net press run shown in A).	12,000	13,500

I certify that the statements made by me above are correct and complete.

H. Russell Kay, Editor

Nelson of Templeton, Mass., on August 20, 1971. Lt. Manty serves with the U.S. Army Ordnance Corps in Bamberg, Germany... GEORGE P. MOORE to Miss Karen Marie Brown of Grafton, Mass., on August 7, 1971. George is a law student at Suffolk University, Boston, Mass., his residence being in Waltham... BARRY W. SODEN to Miss Madeline Jean LaValley of Feeding Hills, Mass., on August 28, 1971. The couple will reside in Marlborough. Barry is with Boston Edison Co., Framingham.

Married: FRANCIS A. VERNILE to Miss Sally Ann Kalentkowski of New Britain, Conn., on August 21, 1971. The groom is a graduate student at the University of Connecticut in Storrs.

DAVID D. ANDRE has a position as actuarial trainee at Mass. Mutual Life Insurance Co., which is located in Springfield, Mass... Sales coordinator for Coppus Engineering Corp., Worcester, Mass., is DANIEL K. BREEN of Hopedale... 2/LT. ROBERT C. COURNOYER serves as watch officer for the U.S. Army at Vint Hill Farm Station, Warrenton, Va... DINKAR V. DESAI works as senior research associate at Polytechnic Institute of Brooklyn, N.Y... The biomedical engineering dept. at WPI employs DR. ROBERT J. HARVEY, affiliate associate professor... Teaching in the Lebanon, N.H., High School mathematics department is PHILIP H. JOHNSON who makes his home in Lyme... ROGER L. JOHNSON works for the Medical Systems Department of General Electric Co., Milwaukee, Wisc. He is in the management training program... Now working in pollution control research at Riley-Stoker Co., Worcester, is STEPHEN A. JOHNSON of Holden... Western Electric, North Andover, Mass., employs ROBERT C. KEENAN, who resides in Salem, N.H... JONATHAN W. LEAVITT works at Alden Research Lab., WPI. He lives in Holden, Mass... New England Electric System, Systems Planning Dept., employs JOHN F. MALLEY as an engineer in training... Form Roll Die Corp., West Boylston, Mass., has named ROLAND A. MASON as assistant general manager. He makes his home in Sterling Jct... LT. WILLIAM R. NAAS is stationed with the U.S. Army at Ft. Meade, Md. He lives in Laurel ... JOHN P. OBER serves in the 62nd Engineer Co., U.S. Army, overseas in Italy ... A traffic control installer for C. I. R. Electrical Contractors, Hampden, Mass., is RAYMOND C. PAULK, one of the founders of the firm... F. DAVID PLOSS is with Trane Co., Detroit, Michigan... Studying at WPI as a graduate student is RICHARD J. SCHWARTZ who resides in Worcester... Marine Lance Corporal WILLIAM D. SMITH has reported for duty with the Headquarters & Service Co. of the Third Marine Division on Okinawa.

Now a resident of State College, Pa., ROBERT T. STULA studies as a graduate student at Penn. State University, University Park... P & L Biochemicals, Milwaukee, Wisc., employs JOSEPH A. TOCE, chemist ... American Telephone and Telegraph — Long Lines, White Plains, N.Y., has named STEVEN A. UDELL as accounting operations supervisor... ROSS E. WEAVER works in the capacity of field engineer for the Factory Insurance Association, Boston, Mass. Derry, N.H., is his home... ROBERT PAUL WHITFORD serves as design engineer for the General Electric Co. in Fitchburg, Mass.

1971

Married: MARK A. AGLIO to Miss Michelle Ann Boulette of Whitinsville, Mass., on August 28, 1971. Mark teaches at Our Lady of Providence Preparatory Seminary in Providence, R.I... J. LEE CRISTY and Mary Ann Therese Melos of Rochester, N.Y., on September 11. The groom is a consulting systems analyst at the Fallon Clinic, Inc., Worcester, Mass... LOREN L. COMPSON to Miss Joyce Shepherd of Weedsport, N.Y., on July 31, 1971. Loren serves as a cost engineer for Torrington

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Construction Co., Glens Falls, N.Y... JAMES F. CRITTENDEN and Miss Penelope A. Fuller of West Hartford, Conn., on Sept. 5, 1970. Jim is a partner in the Residential Asphalt Protection Co., West Hartford. He lives in New Britain... EDWARD F. CUNNINGHAM to Miss Mary Ellen Miller of Waterbury, Conn., on October 2, 1971... KEVIN J. DONAHUE and Miss Maria Lee Glennon of Worcester, Mass., on August 1, 1971. Kevin works as a junior engineer for the City of Worcester, Municipal Airport... RICHARD E. DYNIA to Miss Patricia Anne Lucibello of Meriden, Conn., on September 24, 1971. Serving the bridegroom were his WPI classmates PHILIP JOHNSON, best man; and JOSEPH AUSANKA and THOMAS COPP, ushers. The groom is a design-manufacturing engineer for IONA Mfg. Corp., Manchester, Conn.

Married: DWIGHT P. EDDY to Miss Linda Anne Trombley of Haverhill, Mass., on July 25, 1970. Dwight is a data processing design manager at Norden Division, UAC, Norwalk, Conn... ERNEST R. JOYAL and Miss Christina Argo of Greenville, R.I., on May 28, 1971. The groom is employed at the U.S. Naval Ship Engineering Center, Hyattsville, Md... PETER A. SALIS to Miss Susan Marion Harrington of Nashua, N.H., on June 19, 1971. The couple is residing in Speedway, Ind. Peter has been employed by the National Starch & Chemical Corp., Indianapolis... DONALD J. USHER and Miss Lyn Anne Hudson of Malvern, Pa., on June 12, 1971. Don is a construction engineer with Babcock & Wilcox Co., Barberton, Ohio... ANDREW J. GRIFFIN and Miss Victoria A. Goucher of Milford, Mass., on May 27, 1971. The couple resides in Millington, Tenn... WILLIAM A. PHILBROOK to Miss Dianne M. Beaudoin of Millbury, Mass., on August 21, 1971. The groom is a test technician for Incoterm, Marlboro.

CARL E. GILMORE is currently a graduate student studying at the University of Florida which is located in Gainesville... JAMES K. ABRAHAM is the manager of the environmental testing division of Commercial Testing & Engineering Co., Chicago, Illinois. His residence is in Evanston... Public Service Electric & Gas Co., New Brunswick, N.J., employs JOHN EDWARD ANDERSON as a cadet engineer... PAUL B. ASH is a graduate student at the Univeristy of Massachusetts, Amherst, Mass... Now living in Biddeford, Me., is ROLAND R. BATSON... TODD A. BENJAMIN has accepted a field engineering position with General Electric's Installation and Service Engineering Department, Schenectady, N.Y... The New Haven, Conn., Water Company employs GEORGE E. BLOCK, JR., civil engineer... GLENN E. BRIER is with General Data Conn. Industries, Inc., in Norwalk, Conn... PROFESSOR JOHN N. BRUSSEAU of the engineering department of Western New England College, Springfield, Mass., was a busy man in October. During that month he spoke at the meeting of the Connecticut Chapter of the Institute of Electrical and Electronics Engineers in New Haven, the title of his talk being "Spectrum Analysis of EEG Waves". He also spoke at the Yale faculty club and was preparing an address to be given at the national conference of the Institute of Electrical and Electronics Engineers Professional Group for Engineering in Medicine and Biology in Las Vegas, Nev... General Staff Reporter for the *Worcester Telegram & Gazette,* Clinton, Mass., office is PAUL J. CLEARY... Westinghouse Electric Corp., Philadelphia, Pa., has named DANIEL E. DEMERS an associate engineer... His brother, DAVID J. DEMERS, is also with Westinghouse, but is located with the surface division in Baltimore, Md... GREGORY S. DICKSON has employment as a production development engineer at Dow Chemical, Gales Ferry, Conn... DANIEL T. DONAHUE is serving with the Peace Corps... Dravo Corp., Pittsburgh, has named STEPHEN B. DOUGLAS an associate engineer. He lives in Emsworth, Pa... DONALD G. FOGG, JR., is with Procter & Gamble Co., Cincinnati, Ohio, and resides in Chester... Navy Airman Apprentice ANDREW J. GRIFFIN recently completed the 28-day recruit phase of the Navy's "Four-to-Ten-Month" active duty program at the Naval Air Station, Millington, Tenn... JOHN M. GRIFFIN has been employed by the New England Telephone and Telegraph Company of Boston, Mass. His home is in Braintree... Working as a design engineer at Hamilton Standard, Windsor Locks, Conn., is ROBERT P. HART... WILLIAM E. HELLIWELL, JR., has accepted a position as field engineer with Riley Stoker Corp. of Worcester, Mass. He is presently located in Columbia, S.C... Studying as a graduate student at the University of Connecticut at Storrs, is DOUGLAS E. HOLMES... LOUIS R. HOWAYECK serves in the supply inventory management division of the Air National Guard... Uniroyal, Inc., of Naugatuck, Conn., has named NORMAN E. JOHNSON as a junior engineer... Omnitech, Inc., Dudley, Mass., employs PHILIP M. JOHNSON, chemist... GERALD J. KERSUS is an electronics engineer with U.S. Naval Electronics System and Evaluation Facility, St. Inigoes, Md... DANIEL F. KING is with the New England Nuclear Corporation, Boston, Mass... Serving as a Peace Corps Trainee in Jamaica, W.I., is MYLES H. KLEPER of Hamden, Conn... Chemical engineer CLAUDE P. MANCEL's business address is 8 rue Etienne Jodelle, Paris 18, France... SCOTT T. McCANDLESS works as a highway engineer for Howard, Needles, Tammen & Bergendoff, Boston, Mass... Agricultural engineer for Duncan Schillinger Farm, Scottsville, N.Y., is WILLIAM R. MELVILLE III... RAVINDRA M. NENE serves as a field engineer for Burroughs Corp., Boston, his residence being in Somerville, Mass... DR. SANDER E. NYDICK has accepted a position as senior development engineer with Thermo Electron Corp., Waltham, Mass. He makes his home in Stow... The Electric Boat Division, General Dynamics Corp., has named ROBERT A. PACE associate engineer... VINCENT T. PACE is an electrical construction field engineer for Philadelphia Electric Co., Philadelphia, Pa... Residing in Gloversville, N.Y., JOHN G. PLONSKY works for the General Telephone Co. of Upstate N.Y., in Johnstown... ANTHONY SCHEPIS has accepted the position of industrial engineer with the Sealy Mattress Co., of Randolph, Mass... STEPHEN T. SERGIO is a 2/Lt. in the U.S. Army at Fort Benning, Ga... BRUCE SODERMAN writes that he is a Private serving with the Army and is stationed at Ft. Dix, N.J... Peace Corps volunteer JOHN F. SPERANDIO is stationed in Uganda, Africa, where he expects to spend the next two years... RONALD C. STRAND has been employed by Camp, Dresser & McKee, Inc., Boston, Mass... Granger Construction Co., Inc., has named PAUL R. SWENSON as field engineer in Worcester, Mass. He lives in Jefferson... RICHARD V. TINO, JR., holds the position of quality control engineer for Polaroid Corp., Waltham, Mass... BRUCE R. TOMPKINS is with the Torrington Construction Co., Glens Falls, N.Y. His home is in Lake George... Among the graduate students at Duke University, Durham, N.C., is NOEL TOTTI III of Puerto Rico. Noel comes from quite a line of WPI graduates, including his grandfather, Noel Totti of the class of 1911; his father, Noel Totti, Jr., '42; his granduncle, Etienne Totti, '11 and his cousin, Etienne Totti, Jr., '42... The Philadelphia Electric Co., Philadelphia, Pa., employs THOMAS O. VANDEVENTER of Narberth ... RAVINDRA K. VORA is associate engineer for Otis Elevator Co., in Yonkers, N.Y... Serving as a supervisory assistant for New England Tel. & Tel. Co., Pittsfield, Mass., is STEVEN C. WATSON... Recently commissioned as an Army Second Lieutenant at Indiantown Gap Military Reservation, Annville, Pa., was THOMAS J. WERB... GLENN H. WHITE is serving as a Peace Corps trainee in Washington, D.C... Curtis 1000, Inc., West Hartford, Conn., employs ROBERT A. WOOLLACOTT, JR., management trainee... RONALD L. ZARRELLA has a position as production supervisor at Clairol, Inc., Stamford, Conn. He lives in Waterbury... MICHAEL P. ZARRILLI reports that he is a graduate student at the Wharton School of Finance & Commerce (University of Pennsylvania), in Philadelphia.

Feedback

To the Editor:

First I wish to offer my compliments on a fine article by Ken Maymon in the October *Journal.* Perhaps recognizing the failure of the federal government to cope with the pollution problem is the first step toward developing more effective programs.

The conclusions, though, are very disturbing. Mr. Maymon concludes that we need reorganization of federal bureaucracy and a "new way of thinking" for our politicians. Our country has, however, needed these changes for many years, and it appears that nothing short of widespread social revolution will ever change the way politicians think.

As individual engineers and scientists we have at our command the most powerful of all weapons against pollution – our professional integrity. It is machines that pollute; engineers and scientists design machines, and politicians and businessmen tell engineers and scientists what to do. Since businessmen and politicians are motivated primarily by money and the power to control people, and since machines have no morals, it seems that the only way to break this chain is for the engineers and scientists to exercise their moral judgment and refuse to work on projects which are detrimental to our environment.

The A.M.A. with its congressional lobbying power exercises a great deal of control over drug legislation and other medical matters. But where are the engineering and scientific societies, the alumni associations, and the technical colleges when environmentally destructive legislation is being debated? While our politicians are passing legislation to pay scientists and engineers to destroy the environment, our professional societies seem interested only in how it will affect the unemployment rate.

In the first part of the twentieth century, WPI alumni were leaders in developing the technology that gave us the highest standard of living in the world. I hope that the last part of the century shows WPI graduates as the leaders in the fight to save our environment so that this world can be a safe and healthy place in which to live.

Peace.

Steven A. Clarke, '71
Amherst, Massachusetts

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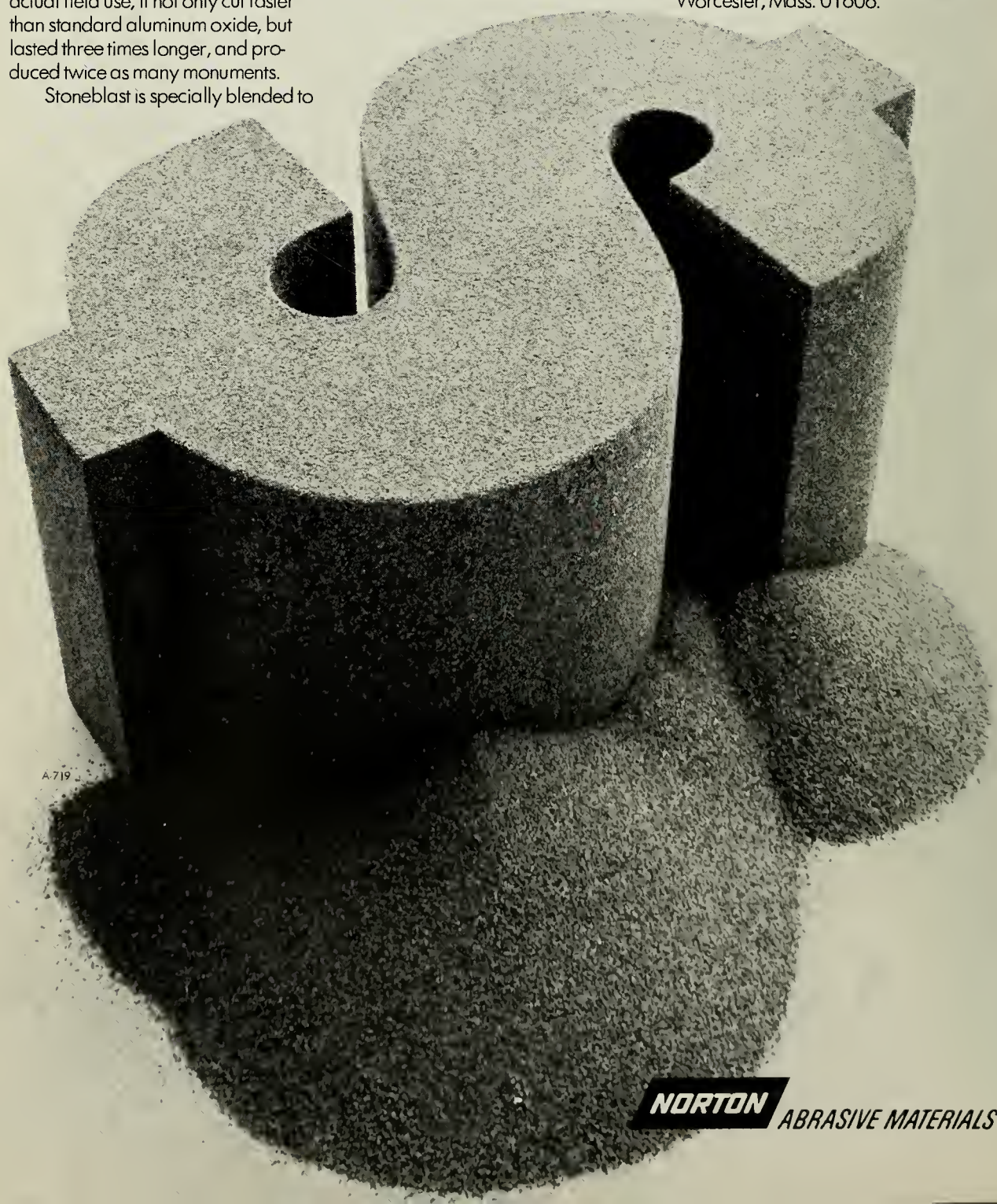

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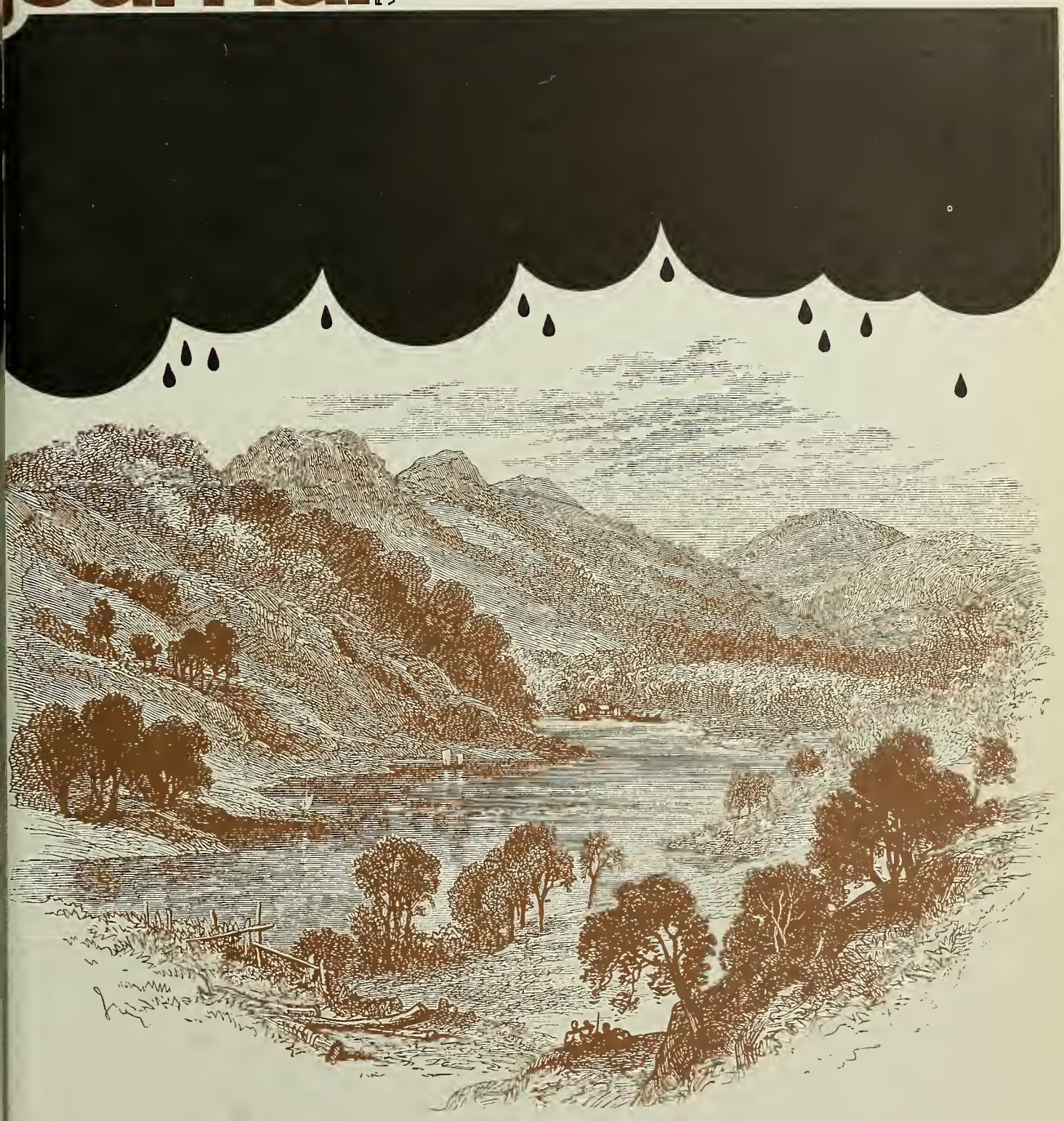

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Russell Train, Chairman of the President's Council on Environmental Quality, takes a probing look at the role of the private citizen in the fight to save our environment.

WPI: A Center for Environmental Studies . . . . . page nine
Dr. Edward N. Clarke, WPI Director of Research, discusses the wide range of environment-related programs at WPI.

Whither the Automobile? . . . . . page twelve
A brief but incisive rundown by ME Prof. Roger R. Borden of the problems caused by the automobile — environmental, sociological, and technical — with a summary of emission requirements and results.

Art Smith, Man At the Top . . . . . page twenty-seven
A profile of the new President of United Aircraft, WPI '33.

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A Note on the Cover: The cover for this issue has been printed on 100% recycled paper. It costs approximately 44% more than our usual paper, which is itself a fine and expensive paper.

The Prospects for our Environment

by Russell E. Train

Chairman, Council on Environmental Quality

THE CAUSE of the environment is one which the citizens have made. No political leader, no government official can take sole credit for putting the environment on the national agenda. Citizens identified problems, organized to influence governmental actions, made themselves heard at public hearings, brought actions before administrative agencies in the courts, and helped the press to interpret their concerns.

They did all this in the face of the massive lethargy of business-as-usual bureaucracy. Some citizen leaders were ridiculed for their efforts, mocked as the "birds and bunnies people," the butterfly chasers, the old ladies in tennis shoes. In many subtle and not so subtle ways they were made to feel that they were not in the American mainstream of bread and butter progress, that theirs was the voice of reaction, that they were callous to the people's need for jobs, that they were soft.

The first hurdle citizens had to overcome was organization. Contrast the situation just ten years ago when three or four national environmental organizations divided up a faithful but small constituency of members, with the situation today which sees innumerable national, State and local groups with large and growing memberships organized with general, specific and *ad hoc* objectives of every kind.

The second hurdle citizens had to overcome was the refusal of people to take them seriously. This refusal manifested itself in the ridicule of environmental leaders, the inability to attract press attention. Most significantly, there was a barrier between the concerned citizen and the processes of law. Although the contractor hired to bulldoze a woodland or level a hillside could go to court to keep people from standing in his way or delaying his work, the lifelong resident distressed by the impending destruction of a valued part of his community could not even be heard in a court of law because of constricted legal concepts known as "standing" or "government immunity." The law, truly reflecting the older values of the society at large, put greater stock by the immediate economics of a situation than it did by the longer-term aesthetic and cultural implications. Everywhere it seemed as though the part was afforded greater rights than the whole, and while there was no lack of advocates for specific dams, airports, highways and power plants, the fellow who dared to speak out for the environment could scarcely be heard above the roar of the "engine of progress."

By and large the citizens have won their battle to be taken seriously, and few courts turn them away today. The number of speeches and articles exhorting environmentalists to be responsible, and claiming environmental requirements are delaying needed projects and putting people out of jobs, suggests that citizen environmentalists are now being taken very seriously indeed.

Russell E. Train is a graduate of Princeton with a law degree from Columbia. In 1970 WPI awarded him an honorary Doctor of Engineering degree in recognition of his concern for the environment and his leadership in making the technical man compatible with the natural world. In 1969 President Nixon appointed him Under Secretary of the Interior. He was appointed to his present position in 1970. Russell Train is our country's environmental ombudsman.

The measure of citizens' strength today is the government's respect for them.

Finally, citizens have had to learn how things really work, how divergent views are heard and reconciled in administrative tribunals and courts and in the political forum. Shut out for so long, it has been difficult to adjust to a role where citizen opinions are solicited and considered, where recommendations are invited. But this obstacle has also been largely overcome, and there is less shrillness among environmentalists today, and more sensitivity to the complexity of government, the economy, and the needs of the environment.

The measure of citizens' strength today is the government's respect for them. It is simply inconceivable that any agency of government or elected official could turn back the clock and ignore the environmental concerns of citizens for very long — the courts, the press, and the people simply would not allow it.

Now that some of the great battles have been won by citizens, the time has come to ask "What does it all mean?" and "Where do we go from here?" Let me offer some tentative answers.

It is almost a third of a century since the beginning of World War II, and over 40 years since the start of the Depression. Many, if not most, of those years were characterized by deep insecurity. The insecurities of the post-War period were of both foreign and domestic origin, for the instability of the world outside was mirrored by social divisions here at home. Since then much has changed, and the themes that people once marched to no longer stir them. Where once we were confident, aggressive, unified and outward bound, now we can only look back and wonder at those days. We have passed through several revolutions — of rising expectations, civil rights, consumer rights — and we have witnessed the coming of the new politics, the new technology, the new consciousness, the new everything.

Now we are in the midst of yet another revolution, a turning inward. How much the war has been the cause, or whether we are just entering another cycle of history is debatable. We are, however, internalizing our ambitions, and questioning our purposes. One can measure our current mood in any number of ways, and the conclusion is unmistakable. We are showing by our visits to parks and museums, our purchases of books and sporting goods, our responses to polls and elections that we are more and more concerned with personal fulfillment, with productive uses of leisure, with the life of the mind and spirit and with the outdoors.

At a time in our national life when we are questioning traditional goals and redefining our purposes, we have come to a new concern with the quality of life. I do not believe that this concern is a temporary development. In the words of Jean Revel:

> There is a good deal more to the ecological movement than the effect of a practical determinism. After all, for thousands of years mankind has lived (and for the most part still lives) by drinking contaminated water, and he has survived the resulting dysentery and typhoid epidemics. Suffering apparently is not enough to move one to fight for a better environment. Malaria has never caused a revolution. In order to fight, one must be able to see a clear relationship among nature, technology, economic power, and political power.
>
> One must also be able to rise to the belief that nature belongs to every man, and to the realization that an oil slick on the ocean affects one's own good or better, one's own happiness. The development of such a belief therefore implies the existence of a political awareness that calls for the reshaping of intra-social relations, for co-proprietorship, for co-dependence, for co-responsibility.

We are in the midst of a fundamental reordering of our values, and the citizens who have worked to stimulate the debate are now being invited to contribute to it. They must display a maturity, a responsibility, and a staying power in the face of the inevitable testing of the depth of the nation's new commitment by those whose business is pollution or whose values are early American.

The public will ultimately pay these costs, and the public is entitled to know the relationship of the costs it is paying to the benefits it will receive.

There are two arguments that will increasingly be made in one form or another against moves to improve the environment. One I shall call the argument from economics and the other I shall call the argument from equity. It is essential that citizens concerned about improving the environment learn to deal with these arguments, and master the complex language in which they are presented and considered.

There is no question of the continuing need to do a careful and thorough job of economic analysis of environmental problems and programs. This is particularly true as environmental standards rise. Attaining low levels of control is relatively inexpensive but the cost rises rapidly as higher levels of abatement are attained. For example, in one particular industry it costs less than $1 a pound to reduce BOD — the measure of oxygen required to decompose organic wastes — by 30 percent. But to reduce it by over 65 percent can cost over $20 for each pound, and to reduce it beyond the 95 percent level it costs over $60 per pound. Marginal costs of controlling such air pollutants as sulfur oxides and particulates also escalate rapidly at high levels of control. It is important for many reasons that we have a clear understanding of these costs before making far-reaching decisions. The public will ultimately pay these costs, and the public is entitled to know the relationship of the costs it is paying to the benefits it will receive. Second, accurate information on costs is important because there may be more economical and more efficient ways of achieving the same environmental objective. Indeed, there may even be other environmental objectives which should receive a higher priority. Finally, the nation's resources are finite, and an intelligent allocation of those resources among an almost infinite set of desirable goals demands careful cost analysis. This is not to say that cost must be the determining factor in setting environmental standards. But it is a factor that must receive careful analysis if environmental improvement is going to continue to have the broad support of the American public which I believe essential.

It is perfectly fair to ask an environmentalist to deal directly with these questions, and to indicate what the trade-offs will be for a quality environment. But it is also fair for the environmentalist to insist on a rigorous acknowledgment that a poor environment is, in the crudest terms, costing us money. Part of what we give up by improving the environment is a baggage of unnecessary expenses to which dollar values can be broadly assigned. Let me briefly outline some of these costs we now bear for environmental problems.

To be able to deal comprehensively with the question we really need a better environmental balance sheet than we now have. But we already know that air pollution, for example, is costing us money. There is a growing body of evidence which indicates that the long-term effects of exposure to low concentrations of pollutants can adversely affect health and result in chronic diseases and premature death. Major illnesses linked to air pollution include emphysema, bronchitis, asthma, lung cancer, and even the common cold. One evaluation of epidemiological studies suggested that a 50 percent reduction in air pollution would eliminate damages to health by more than $2 billion in a single year. The Environmental Protection Agency has estimated the total economic costs of mortality and morbidity due to air pollution is around $6 billion annually.

One evaluation suggested that a 50 percent reduction in air pollution would eliminate damages to health by more than $2 billion in a single year. . . . The total estimate in 1968 of the direct *costs of air pollution in the United States alone — not taking into account discomfort, anxiety, or aesthetic degradation — was put at $16 billion annually.*

Air pollution also affects property values. Studies of the willingness of people to pay more for residences in areas having cleaner air are persuasive. Data showing that income levels correlate inversely with air pollution levels in large cities — the poorer you are the more you are affected by air pollution — suggest that heavy air pollution may result in lowered property values, and lower housing costs. One study of property values, based on data from three cities, shows that increases of 10 percent in air pollution levels can result in decreases of $500 per residential property tract.

The effect of air pollution on vegetation and materials was estimated at just under $5 billion in 1968. The total estimate in 1968 of the *direct* costs of air pollution in the United States alone — not taking into account discomfort, anxiety or aesthetic degradation — was put at $16 billion annually. This total is far in excess of abatement costs.

Economists have also attempted to put dollar costs on water pollution, taking into account reduced fishery harvests, diminished recreation opportunities and the like, but my point is that those concerned about what environmental reforms are costing us should look *beyond* the jobs provided by the marginal industry which is allegedly squeezed out by strict environmental standards to the broader economic interests of the communities who share their air and water with those enterprises. I am personally confident that we would find a net economic gain; indeed, that we would also find that many more will gain than will lose as a result of pollution abatement.

It is important that people understand that protecting the environment is going to entail costs and that it is they who will pay those costs — not someone else. At the same time, I think it equally important that the public not be scared away by inflated descriptions of the sacrifices involved. It has been my strong impression that those who talk the loudest about the heavy costs the public must bear for environmental quality are often those who are providing the public with products most closely associated with environmental problems. Could it be that they are trying to discourage the public from exercising consumer preferences that might adversely affect their own market? A Harris poll reveals that the people of New York are willing to pay to improve the environment, that 60 percent would pay an additional $200 for a car with a pollution-free engine even if such an engine were not required by law; that 85 percent would be willing to purchase only returnable bottles and pay a five cent per bottle deposit.

In a broader sense, however, while the balance sheet approach to environmental gains and losses may be suggestive, I think it is inadequate. Environmentalists were among the first early to sense the hidden costs of technology, to see that better automobiles and highways and dams and power facilities do not necessarily add up to a better life — that the sum of the parts was worth less than the individual values of each one of them would suggest. Economics has not yet become subtle and refined enough to allow us to account adequately for this phenomenon, but we know it is true. We know that the plight of the modern middle-class American compares to the dilemma of the fellow who always gets what he wants — for a while he goes on asking for more — more appliances, more power, more comfort — until some dark night alone with himself he is moved to ask Why? What it is all worth if the animals have been decimated, the forests reduced, the air befouled, and the broad oceans themselves debased?

More. More power. More comfort. Until some dark night, alone with himself man is moved to ask Why? What is it all worth if the animals have been decimated, the forests reduced, the air befouled, and the broad oceans themselves debased?

Intuitively, we have always understood this to a degree. While we have historically worked hard to increase goods and services, we have at the same time chosen to take a portion of the rewards of economic productivity in the form of reductions in the work week. In the span of several decades, the average U.S. work week has declined from 60 hours with virtually no vacations to less than 40 hours. No one has been moved to complain about what we have given up since 1900 in productivity foregone because they agree so readily about the value of what we have gained — 20 or so hours more of leisure.

The movement to a shorter work week challenged our economy to increase hourly productivity, to mechanize and become more capital intensive. The economic challenges posed by environmental quality objectives are similar in nature but far less in scale than such earlier demands as shorter working hours, paid vacations, pensions and health care. Yet it is true that environmental reforms pose challenges to technology. For example, we have designed our proposed tax on sulfur emissions so that the tax will become more burdensome with time, rewarding enterprises which develop new techniques for eliminating sulfur, and penalizing those which resist change.

The reason perhaps why we are slower to perceive that our continued progress as a people now demands that we improve environmental quality just as a quarter century ago social justice demanded a better deal for the working man, is that the benefits we are now striving for are public, not private. Environmental quality generally has no interest group, no lobby to whom the cause means dollars and cents, days off, or sick pay. Americans have been slow to differentiate between individual goods and communal goods. Many of this country's problems have been aggravated by our historical misunderstanding of the communal nature of air and water. Now that there is some consensus in those areas, the task of the environmentalist is to persuade Americans of the communal nature of much private land use, of distinguished historic buildings and architectural masterpieces and valuable ecosystems.

What about the poor — what's in it for them? What about social justice and equal opportunity?

Our system has always functioned well where adversary interests have had specific objectives and a strong constituency. Where the cause is the public estate, and we all stand to gain, some of our institutions do less well. But we are adapting them. Reduction of bond requirements and abandonment of the rule that litigants must have a direct economic stake to contest public agency actions are instances where the courts have made room for what Edward Banfield has called "the public regarding citizen." The citizen is more and more being invited to scrutinize the quality of service he is receiving from agencies of government and to challenge it directly, by commenting on its proposals through its public participatory processes, or by challenging it directly in the courts when he finds it wanting.

All very well, some may say, but the public regarding citizens who stand to gain from environmental gains are the affluent middle classes. What about the poor — what's in it for them? What about social justice and equal opportunity? We have heard talk recently of "environmental escapism," and suggestions that as a people we are abandoning social objectives and priorities — a decent home for every American family, the elimination of poverty — in the name of less exacting goals such as cleaner air and water and more parks. This I refer to as the argument from equity, and since it questions the very legitimacy of environmental reforms it is essential that environmentalists confront and deal with it.

I believe that the view that we are now escaping into a world of middle class concerns which benefit only the affluent makes three false assumptions:

1. That alleged neglect of social priorities is in some way a consequence of increased support for environmental programs. We are simply not playing a zero sum game where my gain is your loss or vice versa. Economically and politically, it is simplistic to argue that better air for all of us has meant less money for the poor.
2. That although the poor may not define environmental improvements as their primary objectives, they do not stand to gain by them. On the contrary, we have data that indicate that the poor suffer most from air pollution, poor waste management, and inadequate recreational opportunities. For example, in our annual report on the quality of the nation's environment last year we cited data from Chicago showing that the lowest income neighborhoods are in the areas of highest air pollution concentrations. Studies in several other cities show a similar close correlation between low income and high air pollution levels.
3. Third, I believe it is specious and perhaps a trifle guilt-ridden to argue that the interests of the great majority of Americans who are showing in polls and in other ways that they care very deeply about the quality of their natural surroundings are to some extent illegitimate. Galbraith could rationally argue in the *Affluent Society* that the amount of money Americans lavish on chromium auto fixtures and cosmetics was a misallocation of resources in view of the needs of the public estate. But the environmental movement is precisely directed at benefiting the society at large.

Citizens organized in the public interest have been so successful that they now are virtually a fourth branch of government when they care about an issue. If this new status calls for a new sophistication and maturity in the face of subtle and sometimes persuasive skepticism, it also calls for a spirit of conciliation and cooperation with others in the society who see some things differently. And it calls for a realistic appraisal of what is involved.

It is important for us to understand that many of the problems we have — poverty, pollution, inflation, the urban crisis — we share with all the world. Often because we face them first, our solutions and our performance become the measure, mould the expectations, of what is possible. As Revel has pointed out the fundamental changes that are occurring in our society amount to "the first revolution in history in which disagreement on values and goals is more pronounced than disagreement on the means of existence."

While so much proceeds at geometric rates of increase these days, time is still linear, and people are still people. Although our mood may have changed and our needs have become more subtle, our older institutions are moving along with years of momemtum behind them. Institutions are less flexible than people, their turning arcs are wider, and it is more difficult to move them through periods of maximum transition. The regular scrutiny by citizens of

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governmental agencies is serving to energize the agencies themselves, and to discourage their becoming overly preoccupied with themselves and the world of government. In the midst of uncertainties over which areas to emphasize or which priorities to favor in an era of information overload, strong citizen concerns have the effect of focusing attention and clarifying alternative options.

It is the task of the national administration to chart an orderly course through a disorderly time, to accommodate the need for institutional change as quickly as possible without wrecking what is essential and useful in our processes of government. We in this administration are fully committed to the revolution in values now underway, and to the reappraisal of the goals of technology and its consequences. At a time when there is so much that divides people, the cause of the environment is vibrant, youthful and full of hope for young and old, rich and poor.

Moving forward together in this very complex time will require not only sophistication but also conciliation, moderation, and respect for each other's deeply felt wishes and desires. A posture of disciplined application to the business at hand is difficult to maintain in an atmosphere charged with passion, but it is the only approach capable in the long run of achieving the broad goals and the better quality of life we seek.

Last February, when President Nixon sent to the Congress his Environmental Message proposing a comprehensive and wide-ranging set of environmental initiatives, he declared:

". . . Far beyond any legislative or administrative programs that may be suggested, the direct involvement of our citizens will be the critical test of whether we can indeed have the kind of environment we want for ourselves and for our children."

There is no question in my mind but that an informed, concerned, and responsible citizenry is the crucial factor upon which ultimately all environmental progress must depend.

WPI: A Center for Environmental Studies

by Dr. Edward N. Clarke
Director of Research

UNTIL RECENTLY *ecology* was a professional word used and understood only by biologists. *Environment* was a word connected with the study of human behavior to describe the influences which, along with heredity, make people behave as they do.

Today, these terms are household words even though the full comprehension of their meaning is often little understood.

Is the current concern for our environment a fad which will be replaced next year by something else? Or is there a real problem which has finally been recognized by the masses to the extent that they are now willing to support the programs necessary to improve the environment in which we live? The broad-scale involvement of WPI faculty and students in environmental studies and projects described in this issue of the *WPI Journal* provides evidence that these problems are both real and critical.

First of all, what do we mean by the environment? Prof. B. Allen Benjamin of civil engineering answers that. "The term 'environment' means different things to different people, even here on campus. Some equate it with 'pollution' (which is, rather, an environmental *problem),* others with 'air and water resources' in general; still others with *all* natural resources, of which land (with what is under and on it) is a major component. But in the broadest view, and the one I favor, is that the 'environment' includes the physical works of man as well as the elements of nature. Stated another way, our environment is composed of interdependent systems, both natural and man-made. The abuse of one system jeopardizes the quality of the others and ultimately the survival of all."

It is easy for the public to point a finger at technology, saying "you are to blame for the mess in the environment." While there is an element of truth in this accusation, it is no more applicable to technology than to every other segment of society. All of us businessmen, politicians, farmers, educators, and the rest of the citizenry have been looking at the world around us through blinders which prevented us from seeing beyond our own special interests.

The municipalities which dumped raw sewage into rivers without passing it through treatment plants should not blame technology when new government regulations demanded treatment to improve water quality for those living downstream. Although technology was available to correct the problems years ago, elected officials with few exceptions could see no advantage to their own community in undertaking such an expensive public works project. Even if they had, they would have been faced with the difficult job of convincing the citizens to increase their taxes to pay for the project.

The businessman who found it economically desirable to dump his wastes and by-products into streams or through stacks into the air was suffering from the same limited vision. If approached by local officials about stopping the practice, his answer was often a threat to leave town, eliminating jobs for local citizens. His claim was that he was faced with the necessity of making a profit or going out of business. For the marginal business, this might have been the only alternative. However, prosperous businesses often took this same attitude.

It's easy to point to the city sewage plant or the smoking stacks of industry as sources of pollution, but until each of us recognizes his own contribution to the overall problem we cannot hope to solve it. Fortunately, the public is being made aware of the individual's responsibilities.

The nation's college students picked up the torch to crusade for a better environment sometime between their crusades for civil rights and the end of the war in Vietnam. Then the politicians began to speak on the perils of pollution with the result that new laws were enacted to protect the environment. The remaining wetlands received a reprieve from the real estate developers as people finally

realized that they are a part of the natural ecosystem in which man lives. Federal standards on automotive exhaust emissions were applauded by the people, if not by the auto makers. They couldn't be met, said Detroit, but teams of college students from all over the country including five WPI teams proved the standards could be met in the 1970 Clean Air Car Race.

WPI faculty have provided national leadership in environmental research. Worcester Polytechnic Institute is, in fact, a center for environmental studies. It does not have a separate "environmental" discipline under a department head. Rather, these studies permeate the entire program and curriculum. Because the problems of correcting the misuse of the environment cut across the lines of the traditional academic disciplines, this represents a logical approach.

Environmental problems and WPI's response to those problems have had a major impact upon education and research at WPI. There has been a nearly ten-fold increase in sponsored research since 1965 at WPI, with much of the growth in fields related to the environment. A major portion of the sponsored research at Alden Research Laboratories is concerned with the thermal pollution of rivers and other water systems. Nearly half of all the sponsored research on campus is related to air, water, and solid waste problems.

WPI's faculty and facilities were in the right place at the right time to work on environmental problems when WPI made the decision to expand its research program. Instead of following the more traditional engineering college path of becoming heavily involved with defense and space research, WPI was alert to the then (1965) growing awareness of environmental problems and proceeded to grow in this particular socially-oriented direction.

The present concern for the pollution of our environment was first brought to the attention of most people by the late Rachel Carson in her book, *The Silent Spring.* However, the problem has been of concern to others for much longer. For example, research into the problems of thermal pollution of streams was begun in 1952 at WPI's Alden Research Laboratories. This first model study of the Schuylkill River was the forerunner of twenty-five studies on the problems created by returning heated water to streams from power plants, both conventional and nuclear powered.

The faculty at WPI recognized the dangers of continued pollution before it became a national concern. In 1967, the theme for a day-long, "Scientific Briefing for Tomorrow" seminar for business leaders was entitled "Pollution: Danger in Our Time." This program featured a number of eminent authorities describing the problem of pollution and steps already being taken to correct the problems.

Perhaps that Scientific Briefing program was before its time for the topic was not then of popular concern. However, for the businessman who attended, it was a practical forewarning of the public clamor which was about to descend on business everywhere.

WPI's early response to the need for solutions to environmental problems created such an impression on the Sloan Foundation that it provided a three-year grant of $200,000 to establish an Environmental Systems Study Program for undergraduate students. This is the first grant of this type ever given by the Sloan Foundation. The ESSP program seeks to develop the methods for teaching students to approach the solution of environmental problems as an interdisciplinary effort. The program, co-directed by Drs. Zwiebel and Keshavan, deliberately seeks a cross-section of participating students and faculty from many departments.

Students in ESSP are first exposed to the theoretical aspects of environmental problems to help them recognize, understand and integrate environmental and social considerations into a project. A key element is the actual project which brings students and faculty into a close working relationship with those people in industry and government who are trying to solve a real problem.

Working in small groups, ESSP students study every aspect of their selected project . . . technological, economic, and social. Only by recognizing the interrelationship of all these areas in an acceptable solution can they effectively act on the problem.

A typical project now in progress involves the discharge of sewage treatment sludge into Boston Harbor. Another concerns air pollution in Worcester.

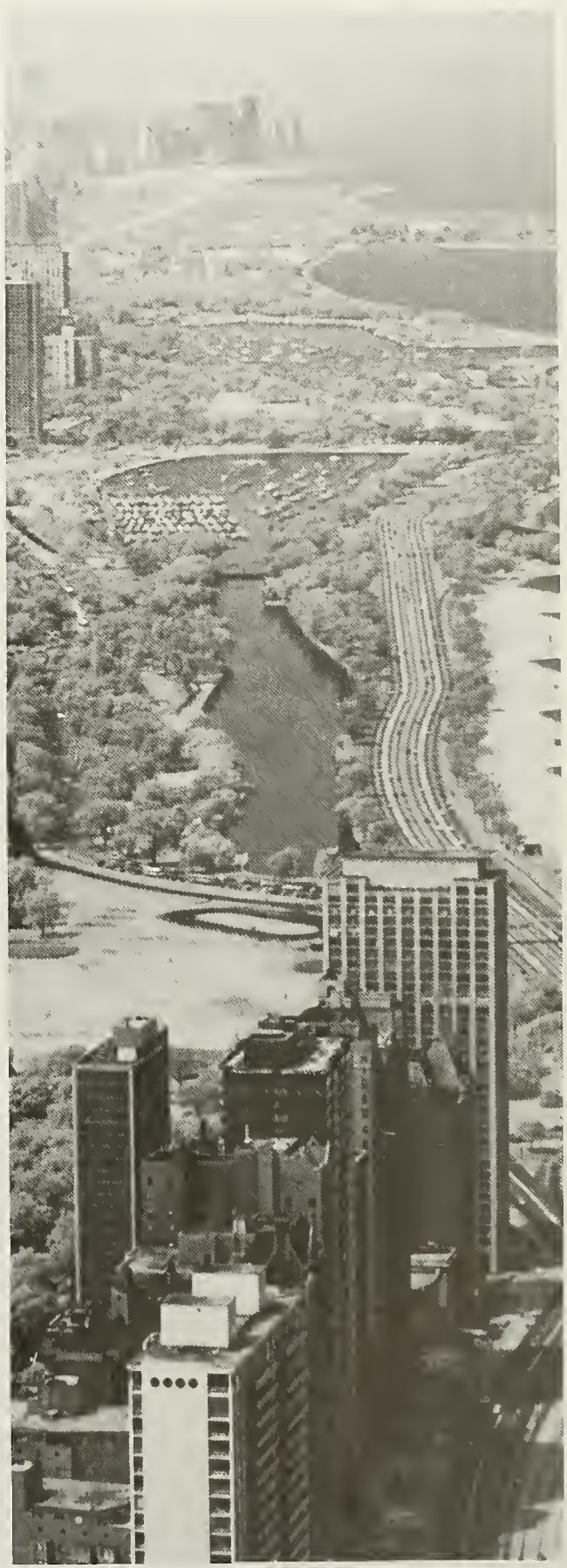
Initially, the environmental programs on campus were primarily in the hands of chemical, civil, and mechanical engineers, and chemists, often with a single-discipline orientation. The electrical engineer, however, has come roaring into the picture recently, primarily because of an ability to work on problems involving large systems.

Professor James Demetry has a new sponsored program to educate selected health boards, planning and conservation commissions, and other town and city decision-makers on the environmental issue. Professor Clements has submitted a new proposal to NSF to use dynamic state estimation techniques (originally applied to aerospace and defense problems) on electric power systems in order to minimize fuel consumption (and hence pollution) and to avoid system instabilities, brown-outs and black-outs. Professor Harit Majmudar is serving as program manager of a newly developing proposed program concerned with power-plant siting, a subject of considerable environmental concern. In the latter program, Professor Majmudar will manage the program and the use of research results obtained from the coordinated efforts of political scientists, sociologists, and economists, as well as engineers.

The civil engineers have generally viewed the environmental issue in its broadest sense, i.e., the aggregate of all external conditions and influences on society. Housing, transportation, and conditions of poverty are part of the broadly conceived environmental problem. Professor Carl Koontz is planning a major study of the community impact of interstate highways I-91 and I-291 in the Springfield, Massachusetts, area. In the past, new highway location has largely been determined by cost-benefit analysis. Currently, and more so in the future, social effects will play a dominant role in highway planning. Professor Koontz's research will provide knowledge for better highway planning in the future.

Today, it's impossible to watch television or listen to radio without hearing advertising claims for washday products which proclaim the low pollution virtues of the sponsor's product.

The claims, the speechmaking, the advertising, and the recently enacted laws have all served to arouse the public to the need to protect the environment while there's still time. At the same time, the claims and counterclaims have confused people to the extent that it's often difficult to determine what is truth. It is at this point that the spokesmen for technology must speak out. For too long, this group has been silent. To engage in public controversy was "unprofessional" according to the ethics of a generation ago. Not so today. Perhaps college students of the past decade have helped to change this attitude and for good. In the change from the apathetic students of the fifties to the concerned students of the sixties, students have raised the searching questions which demand that professional people take a stand.



Whither the Automobile?

by Roger R. Borden '61

THE AUTOMOBILE, of all the technological innovations of the twentieth century, has most profoundly affected our pattern of living. The family car, once a luxury, is now taken for granted as a necessity of life. The urban sprawl of most North American metropolitan areas is the inevitable result of an economy based upon motor vehicles (cars and trucks) as the principal form of available transportation.

Even though the passenger car and a host of recreational vehicles have made it convenient to pack up the family and travel for several hundred miles on vacations for relaxation and enlightenment, the automotive vehicle as the dominant form of transportation has created many environmental problems:

1. Before the automobile the city was planned along the trolley line and the rich and the poor often lived within walking distance of one another. It would be naive to think that there was once a "golden-age" when the rich and poor socialized with one another, but at least there was no geographical separation.

Today the suburban youth is reared with others of a similar socioeconomic and racial background. Many youngsters going through the typical suburban high school have almost no contact with a poor person, especially a poor black person. This geographical separation is one of the by-products of the automobile. But we have to decide whether it is the best way to raise our children. On the broader plane, can such economic and racial isolation really foster a democratic society?

2. Many suburban communities are so situated that a second car is a necessity, not a luxury. The man needs a car to get to work, and the woman needs a car to chauffeur the children and run errands. As one cynic has said: "If you don't buy your wife the second car, you'll pay the same money to the psychiatrist, because she will go stir crazy confined to her suburban house."

3. In addition to the more than 50,000 Americans killed each year in automobile accidents, there are several groups that are victims of the automobile explosion — the poor,

N. E. Patriots Stadium/Worcester Telegram

Roger R. Borden is associate professor of mechanical engineering. He was faculty advisor to two of WPI's entries in the 1970 Clean Air Car Race — the two entries which took first place in their respective classes.

the young, and the aged. The poor are affected in several ways. First, many do not have cars, and when they do the vehicles are unreliable and break down frequently. In addition, many of the urban poor have been forced to leave their homes as their communities are disrupted to build new highways that will bring more cars into the already congested cities. The young, particularly in the suburbs, become overly dependent on their mothers, who function as chauffeurs. These youths do not have an opportunity to express their independence until they reach driving age, and for the suburban teenager the automobile has thus become a symbol of liberation. It can also mean a third or fourth car for the family. The elderly who cannot or do not want to drive are unable to live in the burgeoning suburban areas, where life necessitates constant access to the automobile.

4. One of the chief contributors to air pollution in urban centers is the automobile. Yet rather than designing convenient forms of mass transportation, we encourage further pollution and congestion by building new superhighways leading into our cities. In addition, the automobile is a key contributor to space pollution, since much urban land is used for streets and parking.

We should stop treating the automobile as a god. It is one mode of transportation, not the only one. There are ethical implications to the secondary consequences of the automobile, and a host of questions should be dealt with: Is it just that the federal government gives huge subsidies to states to build highways but pittances to develop mass (public) transit? Cannot the highway fund be diverted to mass transit? What about the effects on health from air pollution?

5. In his 1965 book *Unsafe at Any Speed*, Ralph Nader, the consumer advocate, claims that most of our family automobiles have inadequate mechanical and/or structural designs for safe operation. Although there is much controversy centered on the details of Nader's charges, we must admit that many of today's cars leave much to be desired from the standpoint of safe operation at our current pace of living. It would appear that Detroit has sacrificed mechanical and structural integrity for the sake of styling and pseudo-luxury.

The Dilemma of the Automobile

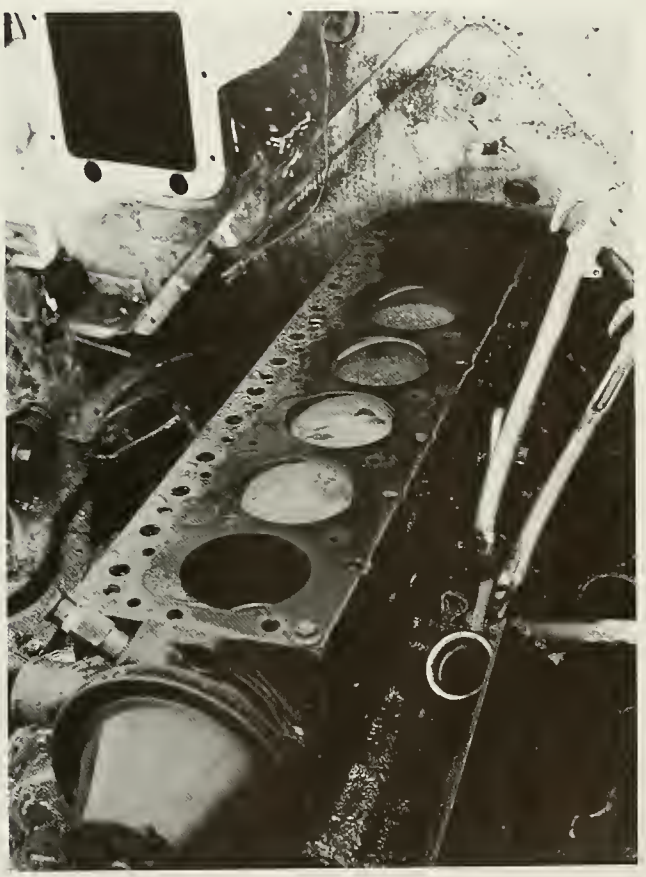
The U.S. Environmental Protection Agency specifies the emission requirements for all passenger cars and eight trucks under 6000 lb. gross vehicle weight. In 1970 there were 85 million motor vehicles in this category in the United States. The projection for 1984 is 144 million. Each year we have a net gain in the U.S. population of 2 million people, but we add 4 million passenger automobiles.

The installed horsepower, in 1971, for all motor vehicles under EPA regulation is 16 billion hp. For comparison, the installed capacity of all the electric utilities and industrial power plants in the U.S. in 1971 is 400 million hp. This is a ratio of 40 to 1. Thus, the U.S. with 6 percent of the world's population uses 30 percent of the world's energy.

The air pollution from this energy generation and use is costly. Dirty air costs the average American family $309 per year: health, $117; residential property, $100; materials, $90; vegetation, $2.

Deaths from air pollution are rising: about 100 deaths per 100,000 of the population.

Our climate is changing. Winter temperatures are up 2 to 3 degrees. Cloudiness is up 5 to 10 percent. Winter fog is up 100 percent. Average wind speeds are down 20 to 30 percent.



Clean fuel is scarce. We have left a 13-year supply of natural gas, a 35-year supply of oil, and a 35-year supply of uranium.

Our known mineral reserves (at present consumption) are being rapidly depleted. We have left:

Zinc for 20 years
Lead for 25 years
Tin for 30 years
Copper for 35 years
Iron ore for 350 years
Coal for 450 years

The Contribution from Automobiles to Air Pollution

The 1969 statistical mean values for automotive engine air pollutants are as follows:

	Emissions in pounds of pollutant per pound of fuel consumed				
Spark-ignition internal combustion engines	*Carbon Monoxide* *CO*	*Unburned Hydrocarbons* *HC*	*Oxides of Nitrogen* NO_x	*Solid Particulate Matter*	*Oxides of Sulphur* SO_x
Los Angeles	0.500	0.093	0.024	0.00022	0.00014
New York	0.972	0.104	0.018	0.00018	0.00014
EPA average for all U.S. cities	0.560	0.072	0.031		
Diesel Engines					
Los Angeles	0.0045	0.018	0.018	0.0045	0.0045
New York	0.0067	0.020	0.025	0.0125	0.0045
Proposed Clean Air Power Plants					
Rover Gas Turbine	0.020	—	0.0003	—	0.002
Thermo-Electron RCE	0.0002	—	0.0030	—	0.00045

When using volatile fuels such as gasoline, 7 to 10 percent of the total fuel input is vaporized and lost before reaching the engine.

Environmental Protection Agency Emission Requirements as of July 1971

	Pre-1966 Base Line	*1971*	*1973*	*1975*	*1976*
CO gm/m	86	23	39*	3.4	3.4
	0.44	0.1176	0.20		
HC gm/m	15	2.2	3.4*	0.41	0.41
	0.007	0.0113	0.0174		
NO gm/m	5	4.0	3.2	3.0	0.4
	0.0256	0.0205	0.0164		

The underscored values in the table give the number of pounds of pollutant per pounds of fuel consumed at an average of 15 miles per gallon.

*A change in the testing procedure allows a higher numerical value indicating lower emissions.

Resource References:

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These are some of the problems. Now we must turn and search diligently for the answers.

This Is Where the Action Is!

These brief descriptions of some of the work being done on the WPI campus in the area of environmental studies describe typical studies and are by no means a complete listing. They are included here to indicate the scope of interest at WPI in using the real problems of environmental pollution as a means to provide a sound learning experience.

thermal pollution

According to Prof. Lawrence C. Neale, director, the Alden Research Laboratories have been involved in studies concerned with environmental problems since the Schuylkill River study of 1952. A large percentage of these studies have involved the thermal effect of steam power plants with "once through" cooling systems. From this single study the laboratory activity in this area has expanded to include a total of over twenty-five studies, of which nine are active at the present time. The scope of these studies has ranged from a simple scale model with a single heated discharge to automatic tidal models including several individual plant installations. The Indian Point III model, as an example, reproduces a 14-mile stretch of the Hudson River estuary and includes plant sites for four different installations with modeled warm water discharges. Instrumentation has advanced from mercury thermometers read infrequently by the model operator to data retrieval systems which digitalize data from as many as 300 sensors every 15 seconds of model time and record all data on magnetic tape for remote data processing.

In all of the thermal studies Alden Research Laboratories is working with the power industry to develop combinations of operating procedures and structural design in order to meet various government standards for water quality. In the final analysis the studies provide environmentalists with predictions in three demensions of the temperature distribution in the receiving body due the plant operation. In the same category of thermal problems a presently active study involves a combination of pumped-storage (hydroelectric) with nuclear power to utilize the upper reservoir as a heat sink and thus protecting the lower reservoir and the associated river from heavy heat loads. Other studies are involving straightforward river situations, natural and artificial reservoirs, and in some cases open seacoast.

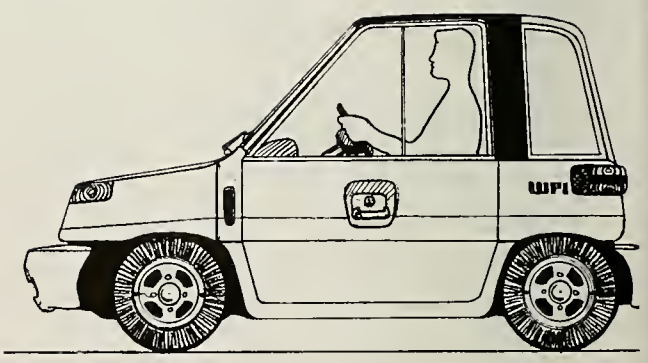
A variation from the river model type of study, but still aimed at the heated effluent problem, has been several

studies of spray cooling. One study for a Gulf Coast utility was directed at the optiming action of spray cooling of a flow from a steam power plant and involved an experimental review of nozzle design and operating conditions. A recent study (both laboratory and field) for New England Power Company has covered a wider range of parameters associated with spray cooling. In addition to temperature reduction efficiency the amount of spray drift interaction of a number of nozzles and associated phenomena have been studied. This aspect is particularly important in situations using brackish water or sea water and thus can produce an impact on adjacent land areas and the possible uses of neighboring lands.

Associated with a number of the pumped-storage projects the flow patterns in the reservoirs have been studied to insure minimum velocities compatible with migratory fish movements. Clear passages have been maintained or developed for the particular design of intake/outlet structures. This has also been developed in terms of other uses of the water body, such as navigational and recreational. Water velocities at the bar racks and other intake sections have been studied and patterns developed to minimize the entrapment of fish and other swimming life forms.

In the hydraulic machinery field several studies have been performed for filters and screen manufacturers. This work has involved new types of equipment designed to improve the efficiency of such equipment as used in the treatment of water and wastes such as sewage.

The interaction or interrelation of power production and water supply has generated the impetus for another model study. In this case the model (at a rather large ratio — 1/4000) of Quabbin Reservoir, which serves Metropolitan Boston, has been developed to review possible introduction sites of additional water sources — notably the Connecticut River — to the reservoir. The study involves density currents and travel times under a variety of conditions and for a number of points of introduction. The aging of the reservoir as well as water quality are involved in the problems and concerns to which these model studies are addressed.



automotive pollution

After reading Professor Roger R. Borden's article on page 12, one can readily appreciate why his major research efforts are being directed toward the development of cleaner automobile engines. His first efforts in this field involved about 60 students, who designed and modified the five WPI entries in the 1970 Clean Air Car Race. WPI teams took two first-place awards and the college had more entries than any other participating institution.

Since the 1970 race, a second generation of students has taken over several of the cars and are working to decrease the emissions even further.

The major project in this area today is the design and construction of an entry for the 1972 Urban Vehicle Design Competition. The competition is sponsored by SCORE, Inc., a non-profit organization of engineering schools whose purpose is to promote engineering design competitions in socially relevant areas of engineering. The first competition will judge the efforts of student teams in developing an *urban* vehicle which will be small, safe, and will produce minimum pollution.

Prof. John A. Mayer (mechanical engineering) is faculty advisor for the WPI group, which now numbers about 50. students. Although most are mechanical engineering students, there are several from other departments. Prof. Mayer was also a faculty advisor to the Clean Air SAAB team in the 1970 competition. The UVDC team began its work a year ago, developing an initial design during the spring and summer. The project is now at the construction stage. The former aero laboratory on the top floor of the Washburn Building has been taken over by the team. Here they are doing their final designs, building the molds for the plastic body, and working on smaller components.

The vehicle is being built from the ground up, although many standard automotive components will be used. It will have an internal combustion engine which will drive the car through a hydraulic transmission to the wheels.

food and fuel synthesis

Dr. Alvin H. Weiss, chemical engineering, began his work in this field on an out-of-this-world project. It began with a grant from the National Aeronautics and Space Administration for the development of a process of creating edible food on long space voyages. Simply stated, Dr. Weiss was trying to develop a process for making sugar from the exhaled breath of the astronauts.

Behind this project lies the fact that in the small closed ecosystem of a space ship it becomes impractical to carry large supplies if the recycling of material within the ship can accomplish the same ends. Experimental results have been obtained which show the feasibility of producing not only potentially edible sugars but also a new class of branched carbohydrates that do not occur in nature.

Even with man's space flights to the moon already history, the concern about manufacturing food in space may not seem as important to the average man on the street as some of the more current problems here on earth. However, "current population growth is such that it is predicted that the manufacture of foods will be required within the next generation. The availability of carbon monoxide from natural gas, petroleum, and proposed coal refineries makes CO a preferred raw material for producing both carbohydrates and single-cell protein," says Dr. Weiss. He believes that large-scale food refineries may well be built in the foreseeable future to produce man-made food. These will be used for animal feed, thus releasing farm land for human needs.

Briefly, the process for creating food from carbon monoxide begins with converting the CO into formaldehyde. The formaldehyde can then be converted to "formose" sugars, which in turn serve as substrate for single-cell protein growth.

Dr. Weiss and his team of researchers are also working on a process to make oil from solid waste. "Present methods of solid waste disposal are ineffective and will become more so in the future, due to the sheer volume of materials. Refuse per capita is expected to increase much faster than population growth, and therefore more effective means of disposal must be explored now." His process is to convert the cellulose in solid waste material into useful oil. The great bulk of household refuse is paper and paper products. With the ban on burning in many communities the amounts of waste have multiplied many times. In his process, which Dr. Weiss described on the NBC Today Show in September, the waste is ground up to fine particles. These fine particles are then mixed with a liquid, probably some of the end-product oil, and fed into a reactor where the cellulose is hydrogenated. The resultant product is about the consistency and the grade of crude petroleum.

Dr. Weiss envisions this process being operated in larger municipalities. Solid waste would be collected from the community and processed in a central plant. The resulting crude oil *could* be burned in power plants or certain municipal buildings. More likely, however, the oil would be sent to a commercial refinery where it would be processed in the same manner as natural crude oil to produce the various fractions which might be needed.

His process handles not only waste paper but also garbage, tree branches, and leaves. He envisions a processing plant which will take assorted rubbish and mechanically separate out glass and metal for salvage and recycling. Just about everything else would go through his oil-making process. This will help solve two of man's pressing problems, a declining reserve in fuels and a mounting potential of rubbish and garbage. And about the only by-product of his process would be steam going into the air with no air pollution.

urban planning

Since the principal sources of the pollution of the environment result from the urbanization of man, the civil engineering department's urban planning program, headed by Prof. B. Allen Benjamin and Prof. George E. Mansfield, is deeply involved in environmental studies.

Student projects in the program for the past seven years have involved consideration for the environment as students planned hypothetical new communities, investigated blighted areas suitable for redevelopment, and considered the impact of a new jet port in central Massachusetts (a proposal made and since dropped by public officials).

An important part of the urban planning program involves the study of the political processes by which things get done in municipalities. In this area, members of other WPI academic departments have contributed their special expertise.

A new program has just been funded by the U.S. Department of Health, Education and Welfare to provide off-campus, non-credit courses for public officials concerned with urban planning. Directed by Dr. James Demetry of electrical engineering, the program will involve classes conducted in area communities during the evening for town selectmen, planning board members, and any other public officials faced with the problems of growing communities.

oceanography

The public is slowly awakening to the fact that the seemingly limitless seas of the world are also affected by pollution. The sea has been a vast dumping-ground for many years, and there is ample, visible evidence that man cannot continue this practice without causing possibly irrevocable damage.

The civil engineering department is offering an advanced undergraduate-graduate course in oceanography to acquaint students with basic knowledge of ocean processes. Prof. Armand J. Silva, head of the department, has been involved in research with the Woods Hole Oceanographic Institute for more than two years. He has been analyzing samples obtained by boring into the ocean floor. Knowledge of the ocean's floor is essential if man is to anchor structures to it. At the present time these are mainly oil-drilling platforms, but long-range predictions suggest that man may someday erect bases for the recovery of minerals or for power generation on the ocean floor.

"The assessment of the engineering properties of marine sediments is vitally important to the design of structures to be founded on or anchored to the sea bed," says Prof. Silva. "Proposals have been made to build rather large structures on the ocean floor, and the stability of these depends largely upon the support provided by the underlying sediments. Thus, it may at some time become feasible to place a nuclear power plant on the sea floor."

"Slumping of marine sediments on even very gradual slopes is not uncommon. These submarine movements can impart tremendous loads to structures such as oil-drilling platforms, and the result may be the collapse of the structure, rupture of the oil line, and disastrous oil spills."

water pollution control

The main thrust of WPI's efforts in the study of water pollution is now centered in the newly built Water Quality Research Laboratory in Kaven Hall, headed by Dr. K. Keshavan, civil engineering. This laboratory was made possible by generous support from the George F. and Sybil H. Fuller Foundation. Facilities are available to both graduate and undergraduate students.

Water pollution studies normally involve an interdisciplinary approach between the civil engineer, the chemist and the biologist. A typical project is one now investigating the possibilities of hazardous chlorinated organic compounds (similar to DDT and other pesticides) being created when natural run-off water is chlorinated in the processing of water for general use or in the treatment of industrial discharges. Dr. Keshavan and Dr. Theodore C. Crusberg, chemistry, are directing the work on this $44,000 NSF-sponsored project.

Another project involves the development of a mathematical model to determine what happens when both organic and thermal pollution are simultaneously discharged into a stream. Here, the active participation of Dr. George C. Sornberger, mathematics, and the facilities of Alden Research Laboratories have been essential.

the quality of quinsigamond

Worcester's Lake Quinsigamond, once a summer resort for the people of the area, has become badly polluted. In recent years, there has been increasing public concern and awareness of the lake's rapidly deteriorating suitability for recreational purposes. This lake is considered one of the finest courses for crew racing in the East, and for several years it has been the scene of the annual Eastern Sprints regatta. However, crew members are told, only partly in jest, "God help you if you fall in."

During the past summer, a comprehensive study was made of the lake by a team of four students, two from WPI and two from Clark University. Working under Prof. Leon S. Graubard (economics, government, and business) of WPI and Prof. Terrance Moody of Clark, these students (one an undergraduate) investigated the lake's pollution from all aspects, including the economic considerations, to determine what future actions might be recommended.

The project was financed by a grant from the New England Board of Higher Education.

The study was planned to (1) determine the subject and scope of existing studies, (2) determine the nature of the pollution problem, and (3) suggest alternative solutions to the problem and investigate their implications. The first two of these objectives were accomplished without much difficulty.

However, the heart of the project was really to determine the social and economic considerations which would affect any corrective action that should be taken. The students' conclusion was that the development of Lake Quinsigamond and the surrounding region would most probably be residential and recreational. The team recommended that pollution abatement should be directed toward the improvement of water quality to meet standards for fishing and swimming. They determined that this could be accomplished through improved sewage handling in the surrounding area and through aeration of the lake itself to increase the oxygen content for fish and reverse the eutrophication process.

nuclear power and cleaner air

As the nation moves toward a recycle economy, striving to reduce waste and pollutants, there will be an increasing need for electric power. At the present time a 1000 megawatt electric generating station burning coal consumes about 160 railroad cars of coal every day; it discharges up to 250 tons of sulphur dioxide into the atmosphere each day along with 80 tons of nitrogen oxides as well as particulate matter. Nuclear power plants of the same size use only a few tons of fuel *annually* and have negligible discharges to the atmosphere. On the other hand, nuclear plants now under construction will require more cooling water than the fossil-fuel-burning plants. The dangers of a nuclear accident in an atomic power plant are extremely remote though not impossible. The storage of waste is also a major problem.

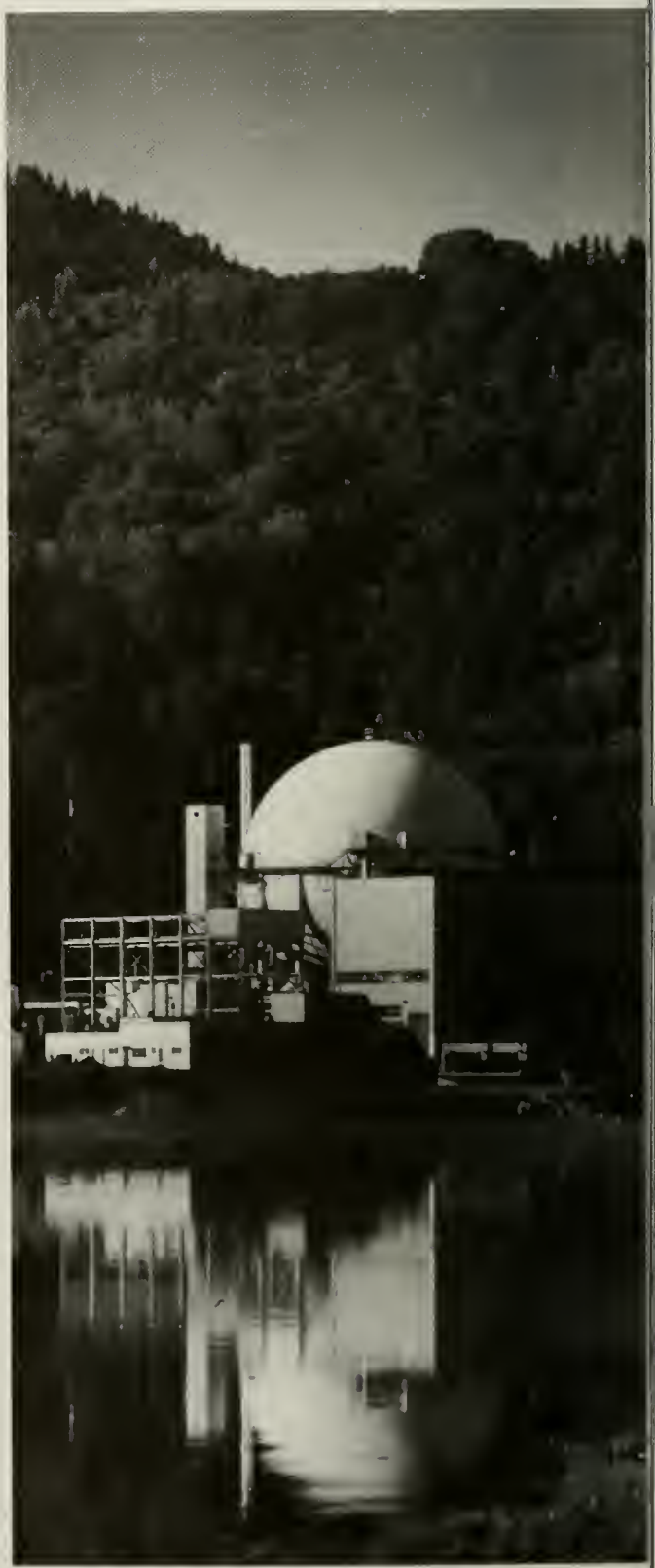
Proposals to build nuclear power plants have generated a storm of controversy in many communities. According to Prof. Leslie C. Wilbur, director of the WPI nuclear reactor facility, some of the arguments advanced are based on technical data. However, all too frequently opposition to the location of a nuclear power plant is based on fear and misunderstanding.

To help provide background information for the public, Prof. Wilbur is now giving a course called"The Nuclear Power Controversy." This is an evaluation of the risks and benefits associated with nuclear power plants. Topics include the governing principles of nuclear reactors and matters of public concern such as radiation effects, thermal pollution problems, and accident potentials.

According to Prof. Wilbur, "the active participation of the public in controversial, technologically based issues deserves recognition and educational support. High school teachers are often no more knowledgeable than the general public concerning the basic principles, terminology, and constraints involved.

"WPI has the staff expertise to readily offer evening graduate courses for consortium students and high school teachers in topics such as air- or water-pollution control, urban planning, power generation, etc. This new course dealing with the nuclear power controversy is intended to be a pilot course for others to follow." A unique feature of this course is that James Hensel, associate professor of English, will assist Prof. Wilbur, who will handle the technical aspects of the issues. Prof. Hensel's primary function will be to insist on lucid and objective presentation compatible with the academic backgrounds of those not specifically trained in science and technology.

The new course is being assisted by a grant from Yankee Atomic Electric Co. However, under the terms of the grant, Yankee Atomic is not influencing course material, classroom discussions, or conclusions.



Reunion Weekend 1972
June 9, 10, and 11

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1907	1911	1912
1913	1917	1922
1927	1932	1937
1942	1947	1952
1957	1962	1967

Reunion Classes

COMPLETED CAREERS

GILBERT C. LAMB, SR., '08

Gilbert C. Lamb, Sr., former navigator of the USS Enterprise, died July 6, 1971 in Milwaukee, Wisconsin at the age of 87 years.

Mr. Lamb was born in Franklin, Connecticut on April 17, 1884 and was educated at Worcester South High School and WPI. As a youth he was a cadet on the Enterprise when it navigated the Neva River in Russia and at that time he was permitted to visit the winter palace of the Czar. Among his superior officers were Admiral "Fighting" Bob Evans and Rear Admiral Robert E. Coontz.

After eight years at sea he worked for the Wisconsin Electric Manufacturing Co. and later headed Gilbert C. Lamb, Inc., (Manufacturers' Representatives). He was a member of A.I.E.E. and was active in Masonic organizations.

Among his survivors are three daughters, Mrs. Lorraine MacDonald, Brown Deer, Wisc.; Mrs. Douglas Paust, Wauwatosa, Wisc.; and Mrs. Lee Price, Newport News, Virginia; and one son, Gilbert, Jr. of Milwaukee.

JEROME W. HOWE, '09

Jerome W. Howe, 85, dean emeritus of students and admissions at WPI, passed away on November 16, 1971 in Worcester, Massachusetts.

Dean Howe was born in Worcester on October 12, 1886, was educated at English High School, and graduated from WPI in 1909 with a degree in civil engineering. Prior to World War I he taught at Pennsylvania Military College in Chester, Pa., and was a bridge draftsman for Phoenix Bridge Co., Phoenixville, Pa. He was in the U.S. Army from 1913 until 1924 when he retired with the rank of Major. While in the service he received two Silver Star citations.

In 1924 he joined the WPI staff as an assistant professor of civil engineering. He was promoted to professor in 1926 and became head of the department in 1933. He was appointed dean and assistant director of admissions in 1937, posts from which he retired in 1953. In 1944 he was awarded an honorary doctor of engineering degree from WPI.

Dean Howe was a frequent book reviewer and authored his own book "Campaigning in Mexico, 1916". He was past president of the Worcester Society of Civil Engineers, Sigma XI, Friends of the Library, Tech Old-Timers Club, and was a developer of the WPI Techniquest program. He was also a former deacon and treasurer of the Central Congregational Church.

Besides his widow, Mrs. Helen C. Howe, Worcester, he leaves a son, Jerome W. Howe, Jr., of Baltimore, Md.; a daughter, Mrs. Beverly Osborn and a sister, Mrs. Florence Andrews, both of Worcester; and four grandchildren.

HAROLD C. HICKOCK, '16

A retired sales manager of the Westinghouse Electric Company, Harold C. Hickock, died in La Jolla, California, November 3, 1971.

He was born in North Adams, Mass., on June 7, 1894 and graduated from WPI in 1916 with an electrical engineering degree. Ten years ago he retired from Westinghouse after 45 years of service, and moved to La Jolla where he was a trustee of the Presbyterian Church and chairman of the Town Council's Mini-Bus Committee. He was a Navy veteran of World War I.

He leaves his wife, the former Ethel M. Howard; a daughter, Mrs. Graves of Denver, Colo.; and five grandchildren.

FRED B. CARLISLE, '17

Fred B. Carlisle, '17, who aided in the secret development of an armored personnel carrier scheduled to be used during World War II, died on October 13, 1971 in Los Gatos, California.

Born in Hillsboro, Ohio, he was educated at Hillsboro High School and graduated from WPI with a Degree in Mechanical Engineering in 1917.

Mr. Carlisle was a retired design engineer for Studebaker-Packard Corp. and played a major role in the development of the controversial post-war car, the bullet-nosed Studebaker Champion. He was with Studebaker for 35 years until his retirement in 1959. He was a member of Alpha Tau Omega.

Among his survivors are his widow, Mrs. Dolly Holladay Carlisle; a son, Dr. Frederick B. Carlisle, Jr. of Los Gatos, California, and a sister, Mrs. Ferris Hughes of Ohio.

HAROLD W. THOMPSON, '19

Harold W. Thompson passed away on October 13, 1971 in Needham, Mass. at the age of 76.

Born in Brockton, on Sept. 25, 1895, he attended Brockton High School and graduated from WPI in 1919. In 1960 he retired from the New England Power Service Co. where he had been an electrical engineer for over 42 years. He was a member of the Massachusetts Society of Professional Engineers and was a Mason. He sang with barbershop quartets in Waltham, Wellesley and Newton.

He is survived by his widow, Mrs. Ruth Ives Thompson; three sons, Donald W. Thompson of Shrewsbury, John Ives of Schenectady, N.Y., and Frederic Ives of Hartford, Conn.; a daughter, Mrs. Nancy Quinlan of Framingham; a brother, Joel Thompson of East Bridgewater, and three grandchildren.

HOBART A. WHITNEY, '19

Hobart A. Whitney, 74, passed away on October 7, 1971 in Pensacola, Florida.

He was born on October 21, 1896 in Leominster, Mass., and attended Leominster High School, Phillips Exeter Academy, and WPI. Mr. Whitney, a retired agent for the Metropolitan Life Insurance Company, was a member of Theta Chi.

Among his survivors are his widow, Mrs. Margaret Brown Whitney; two daughters, Mrs. Betty Boll of Pensacola and Mrs. Claire Ehlers of Atlanta, Georgia; two sons, Hobart A. Whitney, Jr. of Atlanta, Georgia; and Lt. Col. Richard A. Whitney, USAF, Vandenburg AFB, California.

WALTER SMITH, '20

Walter L. Smith, deputy director of Quincy City Hospital from 1951 to 1964, died suddenly in West Harwich, Mass., on September 30, 1971. He was 72.

Born on January 3, 1899 in Whitinsville, Mass., he attended Northbridge High School and WPI. He served with the U.S. Army in World War I and was later employed as an auditor by Kaufmann's Department Store, Pittsburgh, Pa.

HAROLD F. TOUSEY, '21

Harold F. Tousey, Branford (Conn.) park commissioner, died November 11, 1971 in New Haven, Connecticut. He was 73 years old.

Born at Cowes, Isle of Wight, England, on April 27, 1B9B, he attended Bridgeport (Conn.) High School, Lafayette High School, Buffalo, N.Y. and graduated with a degree in mechanical engineering from WPI in 1921.

For over 25 years he was with the Malleable Iron Fittings Co. of Branford. He retired after serving as office manager in 1967. At the time of his death he was with Ben Nek Holder, Inc., Branford.

Mr. Tousey, a past member of Alpha Tau Omega, is survived by his widow, Mrs. Adeline C. Tousey; a son, Richard C. Tousey, Guilford, Conn.; a daughter, Mrs. Richard F. Kilburn of Vestal, N.Y.; a sister, Mrs. W. Sherwood Wilmont, Bridgeport, Conn.; and five grandchildren.

EVERETT E. JESSUP, JR., '26

Everett E. Jessup, Jr., 68, died on December 5, 1971 in Worcester, Mass.

He was born in Bridgeport, Conn., on September 25, 1909, studied at North High School, Worcester, and WPI. A Navy veteran of World War II, he served as a First Class Carpenter's Mate with the Seabees in the Pacific area. He retired in 1967 as a cabinetmaker for the former Franklin Window Co.

Besides his father, he leaves two cousins, Charles Platt of Milford, Conn., and William Platt of Stratford, Conn.

CLYDE W. HUBBARD, '26

Clyde W. Hubbard, 6B, a former assistant professor of hydraulics at WPI, died in Nahant, Mass., on November 12, 1971 after a brief illness.

He was born in Holden on February 11, 1903, attended North High School, Worcester, and graduated from WPI in 1926 with a degree in mechanical engineering. From 1926 to 1941 he was an assistant professor at WPI. During World War II he was employed in the research department at the David W. Taylor Model Basin, Washington, D.C. and later served in the Navy as a lieutenant commander in ship salvage operations in the Pacific theater.

After the war he was affiliated with the Great Northern Paper Co., Millinocket, Maine. In 1949 he joined the Boston firm, Stone and Webster Engineering Corp., as a hydraulic engineer.

Mr. Hubbard was a fellow of the American Society of Mechanical Engineers and was a commander of Mortimer G. Robbins Post, American Legion, Nahant. He was a member of Sigma Alpha Epsilon.

Among his survivors are his widow, Mrs. Virginia Haley Hubbard; two daughters, Dr. Dorothy Gampel of Weston and Mrs. Nancy Marden of Ticonderoga, N.Y.; a brother, Edward, of Endicott, N.Y., and five grandchildren.

FLOYD C. HUNTINGTON, '28

Floyd C. Huntington died October 12, 1971 in Denver, Colorado. He was 64.

A native of Hardwick, Vermont, he attended Hardwick Academy and was graduated from WPI in 192B with a degree in mechanical engineering. He was employed as a fire protection engineer and insurance broker. At the time of his death he was vice president of Hiram C. Gardner, Inc.

He was a member of the Denver Athletic Club, Society of Fire Protection Engineers, Rocky Mountain Chapter of the Chartered Property Casualty Underwriters, Honorable Order of the Blue Goose International, National Association of Mutual Agents, Colorado Independent Insurance Agents, and Phi Sigma Kappa Fraternity.

Among his survivors are his widow, Mrs. Florence Ellanson Huntington; two sons, Richard R. of California and Clinton W. of Grafenoehr, Germany; a brother, Carroll Allen of Dover, Mass., and four grandchildren.

CHARLES S. O'BRIEN, '32

Charles S. O'Brien passed away suddenly of a heart attack on February 9, 1971 in Palos Verdes Peninsula, California at the age of 61.

He was born in Worcester, Massachusetts on July 29, 1919, attended Springfield Technical High School and graduated from WPI in 1932 with a degree in mechanical engineering.

A member of Sigma Alpha Epsilon, he worked in various capacities for the U.S. Envelope Company and Milton Bradley Co., both of Springfield, Mass., before becoming associated with the Bemis Co., Inc., Wilmington, Calif., in 1946. He served as manager of the company prior to his death.

Mr. O'Brien is survived by his widow, Mrs. Mary Kelly O'Brien of Palos Verdes Peninsula, California.

RICHARD L. GOODWIN, '34

A recently retired building contractor, Richard L. Goodwin, died in Bay Pines, Florida, on September 30, 1971. He was 5B years old.

Mr. Goodwin, a native of Springfield, Mass., was educated at Springfield Technical High School, and graduated from WPI in 1934 with a degree in Electrical Engineering.

During his working lifetime he was employed by the Worcester Industrial Power Survey Co., Graton & Knight Mfg. Co., and Logan, Swift & Brigham Co., all of Worcester. During World War II he was a Lieutenant Commander in the U.S. Navy. In later years he was president of Vega Bolt & Nut Supply Co., Worcester, and also associated with the Dayton Rubber Co., Dayton, Ohio. He was a member of Phi Sigma Kappa.

Among his survivors are a son, Clifford R. Goodwin of Worcester; a daughter, Mrs. Susan E. Anderson of Concord, N.H.; and a brother, Ross W. Goodwin, Hadley, Mass.

MARTIN G. CAINE, '37

Martin G. Caine died on October 25, 1971 in Maplewood, N.J.

He was born in Worcester, Mass., on February 1, 1916 and attended Classical High School. After graduating from WPI in 1937 with a Degree in Chemical Engineering, he served as a chemist for the Siemon Co. and later for Monsanto Chemical Co. He joined Tenneco Chemical, Inc., in 1967 and in 1968 was made president of the Tenneco Plastics Division.

Mr. Caine was a member of Alpha Epsilon Pi, the Society of Plastics Engineers; American Chemical Society; and the Society of Naval Engineers.

EDWARD J. CAVANAUGH, '46

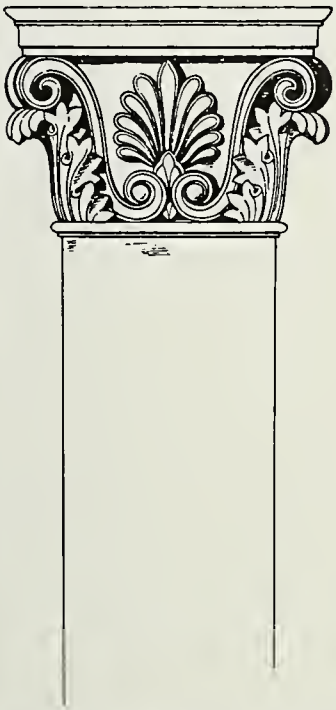
Col. Edward J. Cavanaugh was killed in Vietnam on July 29, 1971.

Born on November 27, 1923 at Worcester, Mass., he attended South High School and WPI. He was a graduate of the United States Military Academy and the Army War College at Carlisle Barracks, Pa.

In 1968 he received his second Legion of Merit award. The distinction came while he was on duty at the Vietnam Headquarters of the U.S. Army near Long Binh. The citation was for "exceptionally meritorious conduct."

Col. Cavanaugh had previously been awarded the Silver Star, the Bronze Star and the Purple Heart while serving in Korea.

YOUR CLASS AND OTHERS



These items are based on information received at the Alumni Office by December 15, 1971.

1908

ROYAL W. DAVENPORT's permanent address is South Leisure World Blvd., Silver Spring, Maryland.

1917

CHARLES HOLLERITH has moved from Jackson, Michigan to Columbia, S.C.

1923

HAROLD H. JUDSON is retired and living in San Antonio, Texas.

1926

RANDALL P. SAXTON has moved from Shelton, Conn., to Green Valley, Arizona.

1927

Having retired as a Rear Admiral, USNR, BRADFORD M. BOWKER is now self-employed as a civil engineer in Las Vegas, Nevada. . . RUSSELL G. WHITTEMORE was the author of an article entitled: "The Nonlacerative Windshield: Not an Impossible Dream" which appeared in the

JAMES J. SHEA, SR., '12, announced his retirement as chairman of the board of Milton Bradley Co., East Longmeadow, Mass., at the quarterly board of directors meeting held in December. He is 82 years old.

The internationally known manufacturer of educational toys was elected chairman emeritus by the board of directors assembled at the meeting. In 1968 when he was elevated to chairman of the board, his son, James J. Shea, Jr., was elected president.

Mr. Shea is credited with saving the firm from bankruptcy after joining it as president and chief executive officer in 1941. He built the games, puzzles and educational materials business into a worldwide corporation. Included in the corporation are Playskool Manufacturing Co., Chicago, Illinois; South Bend Toy Manufacturing Co. of Indiana; Amasco Industries, Inc., Warminster, Pa.; and Lisabeth Whiting Co. of Jamaica, L. I., N.Y. Under his leadership the company founded MB International in Holland and subsidiaries in West Germany and France.

In 1963 he received an Honorary Doctor of Engineering Degree from WPI. Always a strong supporter of the WPI Alumni Association, he was awarded the Herbert F. Taylor Award for outstanding service to the Alumni Association in 1967. He served as president of the Association for two years and was on the Board of Trustees for ten. He was active as a Connecticut Valley Chapter Officer, as a member of the Alumni Council, Fund Board, Techni-Forum and as a program chairman of WPI's Centennial Gifts Campaign.

October issue of the magazine, *Glass Digest.* In the article the author states, "It is our best judgment that future safer windshield developments will not alter the present replacement market." He also went on to say, "The newest windshield does have to be handled somewhat more carefully. We should all realize that strength and safety in windshield performance are not necessarily related, and our purpose has been primarily to develop a safer windshield." Mr. Whittemore is director/product development/automotive sales, Glass Division, Pittsburgh Plate Glass Industries, Inc., Pittsburgh, Pa.

1928

Now living in retirement, JAMES A. MacNABB is located in Palo Alto, California.

1930

HERBERT D. BERRY has retired as vice president of the Thomas Smith Co., Worcester. He lives in Westboro, Mass. . . At Southeastern Massachusetts University, North Dartmouth, Mass., it was recently announced that DR. ELLIS H. WHITAKER of the biology department has been promoted from associate professor to full professor. Dr. Whitaker has been at SMU since 1964.

1931

IDOF ANDERSON, JR., writes that he is retired and living in Sandwich, Mass. . . Having retired as Boston district manager of the Jones & Lamson — Waterbury Farrel division of Textron, JOHN H. HINCHCLIFFE now resides at Hilton Head Island, South Carolina. . . HARRY N. TYLER presently makes his home in Pocasset, Mass.

1932

DR. WILLIAM E. HANSON has retired as senior scientist and executive of the Gulf Research & Development Co., Pittsburgh, Pa., and is planning to move to the state of Washington. Bill, the immediate past chairman of the WPI Board of Trustees, was a leader in the development and adoption of the WPI Plan for education. He served for eleven years as a trustee of the College, three of which were as chairman of the board.

1934

E. LOVELL SMITH, JR. resides in Farmington, Conn.

1935

The director, secretary and treasurer of Gilbarco Canada Ltd., Brockville, Ontario, is HAROLD A. LeDUC.

1936

EDWARD V. MONTVILLE has moved from Pittsburgh, Pa., to Madison, Conn. . . JOHN H. WYMAN writes that he has retired from his position as sales engineer with Durakool, Inc., Elkhart, Indiana. He now lives in Augusta, Maine.

1937

Brewsters of Hartford has named ROBERT S. DENNING as sales manager. He makes his home in Windsor, Conn.

1939

Associate Professor of mechanical engineering HOWARD DUCHACEK is on leave from the University of Vermont, which is located in Burlington. Until August of 1972 his address will be Fort Collins, Colo. . . Allen-Bradley Co., Framingham, Mass., employs JOHN C. HARVEY, JR., sales representative. He resides in Wellesley Hills. . . JOHN P. MOLONY, manager of technical services for Wyman-Gordon's Eastern Division, Worcester, Mass., has been named chairman of the Technical Council of the American Society for Nondestructive Testing.

1941

NORMAN G. KLAUCKE reports that he has three sons in college this year. Doug is now at the University of Vermont Medical School; Jeff is a junior at Cornell and Brad, the youngest, started Dartmouth last Fall. Norm, an executive with the Acme Chain Division of North American Rockwell, resides in Granby, Mass., and has a summer home in South Dennis. . . WILLIAM R. HIGGINS serves as head mechanical engineer for Dresser Machinery Ltd., Tokyo, Japan.

1944

JOHN E. ("Ned") BIGELOW, manager of the Terminal and Display Program of the Information Physics Branch of the General Electric Co., in Schenectady, N.Y., celebrated 25 years of service with the company on November 5th. Ned joined GE in 1946 as a development engineer. Later he became senior engineer in the X-Ray Department and manager of the department's Advanced Engineering and Consulting Lab. A registered professional engineer, he is a senior member of IEEE and a member of the Society for Information Display and Sigma XI. He holds 24 patents. . . A Des Plaines, Illinois resident, CHARLES S. COOPER, works as product manager (development) for Precision Scientific Co., Chicago. . . FRED S. MOULTON has changed his address from London, England to Denver, Colorado.

1945

EUGENE C. LOGAN of Trenton, N.J., has been promoted to chief engineer in the gas department of Public Service Electric & Gas Co., Newark, N.J. Prior to his promotion he served as assistant chief engineer.

1946

JOSEPH J. CONROY reports that he has been plant manager at Whitney Blake (a Superior Continental Co.) since March of 1971. The company is located in Hamden, Conn. . . It was recently announced that JOHN E. LAFFEY has been named vice president and general manager of the Austin-Western Division, Clark Equipment Company, Aurora, Illinois. The new vice president has had an extensive background of experience in the heavy construction equipment industry. He served as eastern regional manager of the Harnischfeger Corporation, manufacturer of cranes and shovels, and general sales manager of the J. I. Case Construction Equipment Division, manufacturer of crawler tractors and wheel loaders. The Clark Equipment Company manufactures construction and material handling equipment. . . The Farrel Co., Rochester, N.Y., employs ROBERT C. TAYLOR, manager-process development, who resides in Fairport, N.Y. . . CARL F. SIMON, JR., has moved to Erie, Pa., where he is program engineer for the General Electric Company.

1947

ROBERT C. MARK, manager of employee and community relations at General Electric's Lynchburg (Virginia) operations since 1960, was recently made manager of non-union and new plant relations. He has been with the company for nearly 25 years. . . In December PAUL D. O'DONNELL, director of Manufacturing Planning and Controls for the Westinghouse Corporation of Pittsburgh, was graduated from the Advanced Management Program of the Harvard University Graduate School of Business Administration in Boston, Mass. . . A Needham, Mass., resident, EDWARD F. SUPPLE, has been awarded the Chartered Life Underwriter designation at National Conferment Excercises of the American College of Life Underwriters in Chicago. He is a special agent for the Prudential Insurance Company.

1948

Ingersoll Rand Co., Mayfield, Ky., recently named ARNE A. KELLSTROM as marketing manager. . . JEROME ECKERMAN writes that he is technical manager at NASA/Goddard S.F.C., Greenbelt, Md. His home is in Potomac.

Art Smith,

Man at the Top

by Lesley E. Small, '72

Over the years there has evolved the popular misconception that WPI graduates seldom achieve professional success greater than the level of "middle management." Possibly this notion stems from the belief that a Tech engineer's education is too parochial, too practical. However, the careers and achievements of many Tech alumni serve to dispel this myth. Indeed, WPI boasts a truly impressive list of eminent alumni.

Among the noteworthy of Worcester Tech's highly successful graduates is Arthur E. Smith, Chairman of the Executive Committee of the United Aircraft Corporation in Hartford, Conn. Mr. Smith, who received his Bachelor of Science degree in Mechanical Engineering (aero-option) in 1933, began his career as a test engineer for International Motors in Allentown, Pennsylvania. Two years later he joined the Pratt & Whitney Aircraft Company, a division of United Aircraft. By 1956 he was the Executive Vice-President of Pratt & Whitney. After serving as president of the division for one year, he became in 1968, the executive vice-president and then president of the entire United Aircraft Corporation. Mr. Smith's latest achievement, appointment to the position of chairman of the executive committee, became effective as of September 27 of this year.

In 1967 WPI presented Smith with the Robert H. Goddard Award, which is given annually to an alumnus for "outstanding professional accomplishment in his field." On June 8, 1969, he was awarded an honorary degree of doctor of engineering by Worcester Polytechnic Institute.

In a recent interview with Mr. Smith, he indicated that he feels the WPI Plan is the "right approach to an engineering education" but like many others, he seems to be withholding enthusiasm until the Plan has substantially proven itself. He noted that the success or failure of the Plan rests largely with the individual advisors – and most especially with the problem of motivation. Mr. Smith also indicated that communication must play a key role in the success of the Plan. He feels that the school has a responsibility to better acquaint both the alumni and the business world with the workings of the Plan.

As far as the role of the alumni is concerned, Arthur Smith maintains that they have an obligation "to give financial support" and "to take part in the direction of the school." He feels however that the alumni should not attempt to "run" the school. On the other hand, he feels that the students should not run the school either. When asked how he felt about having a student member on the Board of Trustees, Mr. Smith said that "a student does not belong as a voting member," but that there should be a student advisory group to insure that the Trustees are aware of student concerns and opinions. He stated that it is "hard (for students) to be objective about the long-term interests" of the school.

In another vein of conversation, Mr. Smith expressed the belief that athletics play an important role in the shaping of the individual, for it is through organized sport that one learns not only how to get along with people but also to accept failures along with success.

When asked to what he attributed his great success, Mr. Smith said, "I suppose you'd like me to say my education from WPI? After assuring him that, all that was wanted was an honest answer, he agreed that WPI had given him an excellent background but that he attributed his success to a lot of hard work and a little bit of being in the right place at the right time.

Smith further stated that five years after graduation, where you are is determined largely by what you have done on the job and not so much by what you did in school. He feels that the education itself is of greatest importance in getting offers and opening the right doors.

Mr. Smith does not feel that the engineers should have to take all the blame for the ecological problems of today. "Engineers have always responded to what the public wants." Now that the emphasis is on clean air and clean water, Smith is assured that the engineers will respond, but that there is bound to be a time lag. According to Smith, "People know what they want but are not able to evaluate what they want to pay for it."

Smith is a warm and personable man who remains unaffected by his tremendous achievements. Talking to Art Smith is like talking to the man next-door. He is truly a credit to himself and a credit to WPI.

Reprinted from Tech News.

ROBERT F. STEWART, '50, former vice president of Litton Industries, Inc., Hartford, Conn., has been named president of the Industrial Products Group of North American Rockwell Corp., Pittsburgh, Pa. In addition to being president of a group, Mr. Stewart will also be nominated as a corporate vice president at the next meeting of NR's board of directors.

The Industrial Products Group which he now heads had sales in the fiscal year ended September 30, 1971 of about $435 million, or nearly 20 per cent of total company sales. It is one of four major groups at NR, the others being the aerospace, automotive and electronics groups. It makes and markets a wide variety of products including printing and textile machinery, gears and other power transmission products, mechanical controls, filters, general aviation aircraft and pleasure boats.

Mr. Stewart was president of Royal Typewriter Co., Hartford, Conn., a Litton Industries company, in 1969 and 1970. He left Royal to take charge of Litton's Machine Tool Group in Hartford, which included New Britain Machine Co. Prior to joining Litton in 1964 he had been president of the Gabriel Electronics Division of Maremont Corp., Millis, Mass.

The WPI Alumni Association awarded him the Robert H. Goddard Award for his outstanding professional achievements in June of 1971. It is the highest professional achievement award given by the Association.

Active in community affairs, Mr. Stewart is a director of the Greater Hartford Chamber of Commerce, the Manufacturer's Association of Hartford County, and the Society for Savings in Hartford. He is also a member of the Economic Club of New York and a corporator of the Institute of Living, Hartford.

1949

Attorney EDWIN E. KAARELA was officially notified in November that he had been appointed as a Finnish consul. He was informed of his appointment by the Finnish Ambassador to the United States, Olavi Munkki, the document of appointment being accepted on behalf of the United States by Secretary of State William Rogers. Mr. Kaarela, who has served as honorary vice-consul of Finland since 1963, lives with his wife and three children in Westminster, Mass.

1950

HAMMOND ROBERTSON, a member of the Queensbury (N.Y.) Town Board since 1964, was honored at a testimonial dinner in October. The affair was co-sponsored by the Queensbury Republican Committee and Republican Club. Mr. Robertson, who is now located in Lincoln, N.H., had served as a director of industrial relations for Finch, Pruyn and Company, Inc., of Glens Falls, N.Y.

1952

H. BURTON RENDALL has employment as a product service engineer with Ethyl Corp., Houston, Texas. . . GEORGE H. SANDERSON writes that he is still with Sperry Gyroscope, Great Neck, N.Y., and enjoying his job as senior research section supervisor. His two daughters are now in school and he and his wife are interested in helping to make their local educational system more "creative". . . The vice president of Incoterm Corp., Marlboro, Mass., is EDGAR L. VAN COTT, who lives in Weston.

1953

G. RAYMOND POLEN resides in Parsippany, N.J., and serves as senior development engineer for Boonton Electronics Corporation. . . The board of overseers of the Foundation for the Advancement of Graduate Study in Engineering at Newark College of Engineering announced in November that DR. ARNOLD ALLENTUCH has been appointed director of research at the college. Dr. Allentuch is a professor of mechanical engineering at NCE and will maintain that rank on the faculty. Active in research and the development of graduate courses at the college, he has centered his personal research in the area of hydrostatically-loaded, stiffened cylinders. His work has been supported by the Office of Naval Research under contracts totaling more than $100,000 since he joined NCE. . . JOHN F. MITCHELL, a science teacher at North Attleboro (Mass.) High School, has been hired by the North Attleboro Board of Health as the town's new full-time health agent. His duties will include responsibility for the administration of local and state health regulations and laws.

1954

DONALD E. ROSS, operations manager of the Split Ballbearing Division of MPB Corporation, Lebanon, N.H., has been named to the Board of Directors of the National Bank of Lebanon. Mr. Ross, who has a background in manufacturing sales, production and management, is a past president of the Lebanon Chamber of Commerce, member of the executive board of the Daniel Webster Council, Boy Scouts of America, and Mary Hitchcock Memorial Hospital Corporation. He is also a director of the New Hampshire Technical Institute in Concord, N.H., and holds memberships in the American Ordnance Association and the American Helicopter Association.

1955

It was recently announced that CHARLES F. McDONOUGH of Bridgewater, N.J., would be chairman of the special gifts department for the 1972 United Fund, Somerset Valley campaign. Mr. McDonough has been associated with the American Cyanamid Co., Bound Brook, N.J., for the past 14 years and is currently assistant to the manager, Refinery Chemicals Department.

1956

RICHARD N. BAZINET is currently located in Houston, Texas, where he is employed by Singer, General Precision, Inc. . . EDWIN B. COGHLIN, JR., of Shrewsbury, Mass., has been elected commissioner of the Mohegan Council, Boy Scouts of America. Also elected to the council board of directors was DR. RICHARD BESCHLE, '50, of Auburn, Mass. . . HENRY J. DUMAS, JR., is the new senior vice president of MFE Corporation, Wilmington, Mass. . . In November 1971 the Hatco Chemical Division of W. R. Grace & Co. announced the appointment of JOSEPH G. WAHL as sales manager. The firsm is located in Fords, N.J.

1957

DR. JOHN M. MATUSZEK, JR. has been named director of the Radiological Sciences Lab., New York State Department of Health, Albany, N.Y. He resides in Delmar.

1958

JAMES K. KARALEKAS, East Providence City Traffic Engineer, presided at the Rhode Island WPI Alumni Chapter meeting held in November at Seekonk. He lives in

Alumni Fund Progress Report

Richard F. Burke, Jr., '38, Chairman of the Alumni Fund Board, reported at the mid-winter meeting of the Board that the 1971-72 Alumni Fund was well organized with over 300 alumni volunteers visiting or calling alumni throughout the country. Burke further explained that this is a unique year in that every fund gift which shows an increase will be matched to the amount of the increase by the Challenge Fund. He said early returns show:

Total Cash: $107,666.30
Total Additional Pledges: $29,376.08
Total Contributors: 1,409
% Participation: 14.7%
Average Gift: $97.26

Burke went on to comment that several leadership gifts have been received from several groups, including:

Alumni Trustees:
% Participation: 76.2%
Average Gift: $1,179.94

Alumni Association Executive Committee:
% Participation: 77.8%
Average Gift: $600.00

Alumni Fund Board:
% Participation: 100%
Average Gift: $206.00

Faculty Alumni:
% Participation: 82.6%
Average Gift: $73.82

Walter J. Charow, '49, Chairman of the Special Gifts Program which has organized personal solicitation in the Northeast and Los Angeles, reported that his program showed the following level of activity:

% Participation: 27.4
Average Gift: $447.13

When interviewed, Charow stated that the Special Gift Committees were seeking gifts at the $300 level and above. He went on to state that when alumni fully understood the priorities before WPI and the need for alumni support that his volunteers were met with warm and generous support.

Special Gifts Region	*Chairman*
Worcester	Francis W. Madigan, Jr., '53
Boston	James E. Rich, '51
Connecticut Valley	William W. Asp, '32
Hartford	Robert M. Taft, '38
New Haven	Charles W. McElroy, '34
Rhode Island	Manuel Renasco, '46
New York	Spiro L. Vrusho, '57
Northern New Jersey	Waldo E. Bass, '33
Washington	Leonard G. Humphrey, Jr., '35
Los Angeles	Donald R. Bates, '40

Phonothons were reported as being a new mechanism of follow-up solicitation and Mr. Burke noted that this program was being organized by Howard I. Nelson, '54. Nelson briefly noted that an enthusiastic team of volunteers had been enlisted and would be conducting phonothons on the following schedule:

Date	*Location*	*Chairman*
February 7-8	Worcester	Peter H. Horstmann, '55
9-10	Boston	Daniel J. Maguire, '66
14-15	Springfield, Mass.	Gabriel O. Bedard, '28
16-17	New Haven	Joseph J. Conroy, Jr., '46
22-23	New York City	Spiro L. Vrusho, '57
23-24	Washington	Kenneth A. Homon, '62
28-29	Buffalo	John H. Geffken, '63
March 1-2	San Francisco	Clifford H. Daw, Jr., '59
6-7	Pittsburgh	Donald M. McNamara, '55

In conclusion, Burke praised the hard work of the alumni volunteers working on the program, and voiced his opinion that their hard work would produce a fund of record size by its completion date.

Riverside... ROBERT P. MICHAUD works as associate airport development specialist for the New York State Department of Transportation, Albany. His home is located in Guilderland, N.Y... Kewaunee Scientific Engineering Corp. of Adrian, Michigan, has announced that J. CLIFFORD WIERSMA is now vice president and sales manager of the corporation.

1959

Born: To Dr. and Mrs. JOSEPH D. BRONZINO, a daughter, Marcella Jo ("Marcy"), on October 27, 1971. Joe is an associate professor in the engineering department at Trinity College, Hartford, Conn. He and his family reside in Simsbury.

1960

Shell Chemical Company, Industrial Chemicals/Petrochemicals, has made JAMES R. BUCHANAN district manager. The new manager makes his home in Cherry Hill, N.J... WILLIAM J. PALMER writes that he is manager of engineering for Jewell Electronic Instruments, Manchester, N.H. He lives in Bedford.

1961

Born: To Mr. and Mrs. LARRY ISRAEL, a daughter, Ilana Beth, on October 6, 1971. Larry is president of Visualtek which is located in Santa Monica, Calif.

The University of Virginia Reactor Facility, Charlottesville, Va., has added HAROLD W. BERK, physicist, to its staff... DR. JAY A. FOX, who received a PhD in Physics from the University of South Carolina last year, has employment as a physicist on the staff of the U.S. Army Mobility Equipment Research and Development Center, Fort Belvoir, Virginia... A Glastonbury, Conn., resident, RICHARD L. HOLDEN, has been appointed Chairman of District II for the Republican party. Employed as a research engineer at United Aircraft Research Laboratory, he is currently vice-chairman of the Citizens Advisory Committee and is a radio officer for Glastonbury Civil Defense... SVEND E. PELCH serves as manager of business planning for the International Paper Co., New York, N.Y. His residence is in Northport.

1962

Born: To Mr. and Mrs. BRADFORD J. BOOKER, their first child, a daughter, Pamela Jean, on October 4, 1971. Brad is a design engineer with Hamilton Standard, a division of United Aircraft Corporation in Windsor Locks, Conn.

RICHARD W. FROST has been promoted from assistant to superintendent underground lines to assistant superintendent overhead lines at Narragansett Electric Co., Providence, R.I... ROBERT R. CASSA-

NELLI of Yorktown Heights, N.Y., has been awarded a patent of his work in the development of a process for multiple layered gelatin desserts. He is a group leader in the Jell-O research division at General Foods' technical center in Tarrytown... THOMAS J. MERCHANT is appointed to a newly created position of environmental and safety coordinator at Bay State Abrasives Division of Dresser Industries, Westboro, Mass. Company officials say that Mr. Merchant's assignment puts the firm in a position to act directly on all legislation relating to pollution control, occupational health and safety and other related fields. The Westboro resident is also a town selectman and previously served as chairman of the advisory finance committee... Texas Instruments of Attleboro, Mass. employs PAUL L. WESTERLIND, manufacturing engineer, who resides in North Attleboro.

1963

DOMINIC J. BUCCA who is manager of purchases at Jamesbury Corp., Worcester, Mass., makes his home in West Boylston... The new general foreman of chemical production for the Uniroyal Chemical Division of Uniroyal, Inc., is JOSEPH V. BUCCIAGLIA, Beacon Falls, Conn. Mr. Bucciaglia has been with the Naugatuck firm since his graduation from WPI and is past vice president of the Uniroyal Chemical Management Club... DAVID R. EKSTROM reports that he is manager-equipment product development for Kenics, Danvers, Mass... NORMAN FINEBURG received his law degree from Boston University Law School in 1971 and now serves as a judicial law clerk for the Supreme Court of Connecticut in Hartford. He makes his home in Farmington... The Rodney Hunt Co. of Orange, Mass. has appointed MICHAEL A. LITTIZZIO as manager, manufacturing services. He will be responsible for directing and coordinating the services of maintenance, inspection, shipping and industrial engineering on a company-wide basis. Until recently he was a unit manager in Ashland at the General Electric plant... Raytheon, North Dighton, Mass. employs JAMES J. MAGALDI, facilities supervisor. His residence is in Easton... ROBERT M. MALBON writes that he is in the Peace Corps. His residence is in Los Altos, California... Among the instructors at the business management seminar sponsored by the Leominster (Mass.) Chamber of Commerce last fall was PETER A. MICHAELIAN, personnel director at Foster Grant Co., Inc... KENNETH OLSEN, a student at New York University Law School, also works as an engineer for Ebasco Services, Inc., New York. Kenny lives in Brooklyn... Transportation analyst for Washington Metropolitan Area Transit Authority, Washington, D.C. is ROBERT A. PICKETT ... GORDON M. WARE studies at the School of Architecture at the University of Oregon which is located in Eugene, Oregon.

1964

Married: PETER P. BURKOTT, JR., and Miss Diana A. Blandford on October 9, 1971 in Brewster, N.Y. The bridegroom is a development engineer for the Norden Division of United Aircraft Corporation, Norwalk, Conn.

Born: To Mr. and Mrs. ANTHONY CROCE, a daughter, Daniella, on June 10, 1971. The new father is still employed by the U.S. Army Weapons Command in Rock Island, Illinois. He and his family make their home in Davenport, Iowa.

RONALD J. ANASTASI has been named assistant director of Magnolia Manor, a health spa located in Gloucester, Mass. Previously he was with the Woods Hole Oceanographic Institute, an assistant executive director for Scientology Coordinated Services, Los Angeles, Calif., and an efficiency expert for Seafood Kitchens, Gloucester... ALLEN W. CASE, JR., who was recently promoted to project engineer for General Electric Company, Schenectady, N.Y., lives in Scotia... The New York firm of Davis, Hoxie, Faithfull & Hapgood employs ALFRED H. HEMINGWAY, JR., patent attorney. Alfred lives on Staten Island... DAVID G. LARRABEE is a student at the University of California, Berkeley. He lives in Albany, Calif... The vice president and treasurer of Community Information Systems, Chaska, Minnesota, is BRIAN SINDER... DR. JOHN A. SPENCER is an assistant chemistry professor at Southern Illinois University, Edwardsville, Ill... DR. PETER C. TROMBI writes that he is a member of the Institute for Advanced Study, School of Mathematics, Princeton, N.J... USAF CAPTAIN PAUL B. WATSON is on duty at Cam Ranh Bay AB, Vietnam. He serves as an air operations officer and is assigned to a unit of the Pacific Air Forces, headquarters for air operations in Southeast Asia, the Far East and Pacific area.

1965

Akron resident JAMES B. CALVIN is currently working toward a PhD in clinical psychology at Kent State University, Kent, Ohio... STEPHEN L. CLOUES now holds the position of regional planner for the Central Midlands Regional Planning Council, Columbia, S.C. He recently received a Master of Planning Degree from Georgia Institute of Technology... LAWRENCE A. HILL is a science teacher at Nashoba Regional High School, Bolton, Mass. He lives in Lunenburg... The Mechanical Drive Turbine Products Dept., General Electric Co., Fitchburg, Mass., employs KENNETH J. HULTGREN as a turbine controls engineer ... In 1971 PETER E. OBERBECK was awarded a PhD EE from the University of Illinois. He is associated with the National Cash Register Company in Dayton, Ohio... RICHARD S. OLSON, vice president – development for National Realty Enterprises, Inc., Pittsburgh, Pa., resides in Bethel Park... DR. DAVID M. SCHWABER, who received his PhD from the University of Akron in 1971, is with Monarch Rubber Co., Inc., of Baltimore, Md... MICHAEL D. SHAPIRO serves as a chemical engineer at The Naval Explosive Ordnance Disposal Facility at Indian Head, Md. Oxon Hill is his home.

1966

Married: STEWART W. NELSON to Miss Carol Ann Cruz in November 1971 at Holyoke, Mass. Mr. Nelson is a sales engineer with The Trane Co., Boston.

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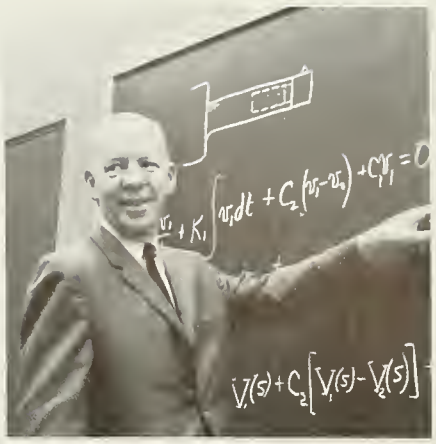

As living becomes more competitive . . . more compact . . . and more complex, the world looks with increasing frequency to science and engineering for creative solutions to its wants and to its needs. And at the Heald Machine Division of Cincinnati Milacron, creative research and development engineers thrive on the daily challenge to provide the metalworking industry with more productive, more efficient and more reliable machine tools.

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EDWARD S. BILZERIAN, Worcester, controller for Bay State Abrasives Division of Dresser Industries, Westboro, Mass., is the new president of the Worcester Area Chapter, National Association of Accountants. . . Speedring Systems — Division of Schiller Industries, Warren, Michigan, has recently given JOHN H. CAROSELLA the position of senior project engineer. John and his family now live in Rochester, Michigan. . . DR. JAMES I. JOUBERT is employed as chemical research engineer for the U.S. Bureau of Mines, Pittsburgh Energy Research Center, Pittsburgh, Pa. . . A native of Whitinsville, Mass., DAVID LONGMUIR, has been named vice president of industrial relations of White Consolidated Industries, Inc., Cleveland, Ohio. Prior to his promotion, Mr. Longmuir was regional director of industrial relations for the corporation . . DR. MALCOLM A. MacGREGOR was recently awarded a resident research associateship at the Naval Research Laboratory, Washington, D.C. He will conduct research in the chemistry division of the laboratory. Prior to his appointment he was a research associate at the University of Chicago. . . DR. MARTIN J. MASTROIANNI is a postdoctoral research associate for Oak Ridge National Lab., Oak Ridge, Tenn. . . The new town planner for Vernon, Conn., is JOSEPH J. PASTIC who was until recently a Captain with the U.S. Army in Germany. His work in the Army was learning "how to allocate shortages," he noted, a problem also apparent in civilian life. Pastic has a wife and three children.

1967

Married: DAVID A. SALAD to Miss Bonny Beth Nezvesky on October 17, 1971 in Fairfield, Connecticut. David is an accountant with Drug City of Watertown. . . ROBERT D. RENN and Miss Nancy Diane DelVecho on December 5, 1971 in New London, Connecticut. The groom is supervisor of production and direct labor planning at General Dynamics Corp., Quincy (Mass.) Shipyard.

ROBERT J. BARON has been employed by the Division of Compliance, Environmental Protection Agency, Research Triangle Park, N.C. . . Chief Civil Engineer RICHARD F. DeFALCO is associated with the Commonwealth Survey Corp. and makes his home in Worcester. . . RAYMOND J. FORTIN of the Mitre Corp. (Bedford, Mass.) technical staff lives in Waltham, Mass. . . U.S. Army CAPTAIN EDWARD A. GALLO, who is now serving in the Ordnance Corp. in Vietnam, received his MS in mathematics from the University of Texas at El Paso last August. . . GLEN R. PARATH is with Ostrow Electric of Worcester, Mass. . . GARY K. WILLIS is a candidate for one of two three-year terms on the School Committee, Mansfield, Mass. He is president of the Citizens Scholarship Foundation and a sales engineer for Bailey Meter Co., Boston.

1968

Married: VICTOR V. CALABRETTA, JR. and Miss Judith Anne Reynolds in Davisville, R.I. on October 9, 1971. The bridegroom is a graduate assistant at WPI. He and his bride make their home in Attleboro, Mass.

Currently serving as a system test engineer with the U.S. Army Strategic Communication Command at Ft. Hauchuca, Arizona, LT. LUCIANO J. COVATI expects to be transferred to Switzigin, Germany in the near future. . . GEORGE F. GAMACHE is assistant project manager for the Beacon Construction Co., Worcester, Mass. . . Now at the University of Illinois, BERTON H. GUNTER writes: "I wish you (WPI) every success in this new money campaign. WPI — small, unassuming and quiet — has a great

deal to offer, and it would be tragic if, for want of money, it could not continue to provide the sort of education and atmosphere which I found invaluable." Bert resides in Urbana. . . LAWRENCE E. JOHNSON works as a systems programmer for the WPI Computer Center. . . Although he resides in Milford, Conn., GARY N. KEELER serves as a systems representative for RCA, Data Processing Division, which is located in Fairfield. . . DR. ROGER L. LUDIN is presently employed as an assistant professor at Burlington County College, Pemberton, N.J. Medford is his home. . . WILLIAM J. KRIKORIAN has been discharged from active duty in Vietnam and is returning to his previous civilian employer, Metcalf & Eddy, Inc., Boston, where he will serve as a structural engineer. . . WALTER C. LYNICK, who was recently with the U.S. Army Corps of Engineers, has returned to work for the New York State Department of Transportation, Region I, Albany, N.Y. . . ANDREW L. PIRETTI, an MBA student at the University of Massachusetts, resides in Holyoke. . . Still employed by Pratt and Whitney Aircraft as an experimental test engineer. . . WILLIAM D. POULIN has moved from Riviera Beach to West Palm Beach, Florida.

1969

Married: RICHARD C. CARLSON to Miss Judith E. Noyes on November 7 in Walpole, Massachusetts. Richard is a civil engineer with the U.S. Army Corps of Engineers, New England Division, Waltham. The newlyweds reside in North Easton, Mass. . . JAMES L. RICHEY, JR. and Miss Frances L. Bryniarski in Orange, Mass. on October 9, 1971. The groom was a lieutenant in the U.S. Signal Corps in Vietnam and is now employed as an electrical engineer. The bride is a French teacher at St. Mary's High School, Lynn. . . DONALD W. RULE to Miss Carleen Elaine Ruohonen on November 27 in Worcester, Massachusetts. Mrs. Rule attended Emmanuel College and is a graduate of Boston University. Her husband is a candidate for his doctoral degree in physics at the University of Connecticut, Hartford.

Born: To Mr. and Mrs. JOSEPH E. STAHL, a son, Jameson Thomas, on October 24, 1971. Joe is still with Moulded Products, Easthampton, Mass. . . Teaching physics at Shrewsbury (Mass.) High School is CRAIG R. BARROWS who resides in Spencer. . . DOUGLAS E. BROWN of Noank, Conn. is a mechanical engineer with the Naval Underwater Systems Center, Ocean Engineering Division, New London . . . U.S. Army CAPTAIN MICHAEL F. DELLEO, JR. has been awarded his second bronze star medal near Long Binh, Vietnam. Capt. Delleo received the award while assigned as a manpower officer in Headquarters, U.S. Army Engineer Command having "distinguished himself through meritorious service in connection with military operations against hostile forces in Vietnam.". . . JOHN M. HISCOCK is currently a department engineer for the Second Taxing District Water Dept., South Norwalk, Connecticut. Previously he was with the water and sewer planning unit of the Philadelphia Water Department. . . E. I. du Pont Experimental Station, Wilmington, Del., employs THOMAS F. X. McAULIFFE who lives in Claymont. . . Thiele-Engdahl, Inc., Elizabeth, N.J. recently gave MICHAEL T. NOWAK the position of ink chemist. Michael's home is in Beacon, N.Y. . . PFC. MICHAEL G. OUELLETTE has completed nine weeks of special training at Ft. Jackson, S.C. He learned the techniques and tactics of a rifle squad, patrolling, and individual combat operations. . . MARTIN SURABIAN works as a mechanical engineer for Bechtel Corp., Gaithersburg, Maryland.

1970

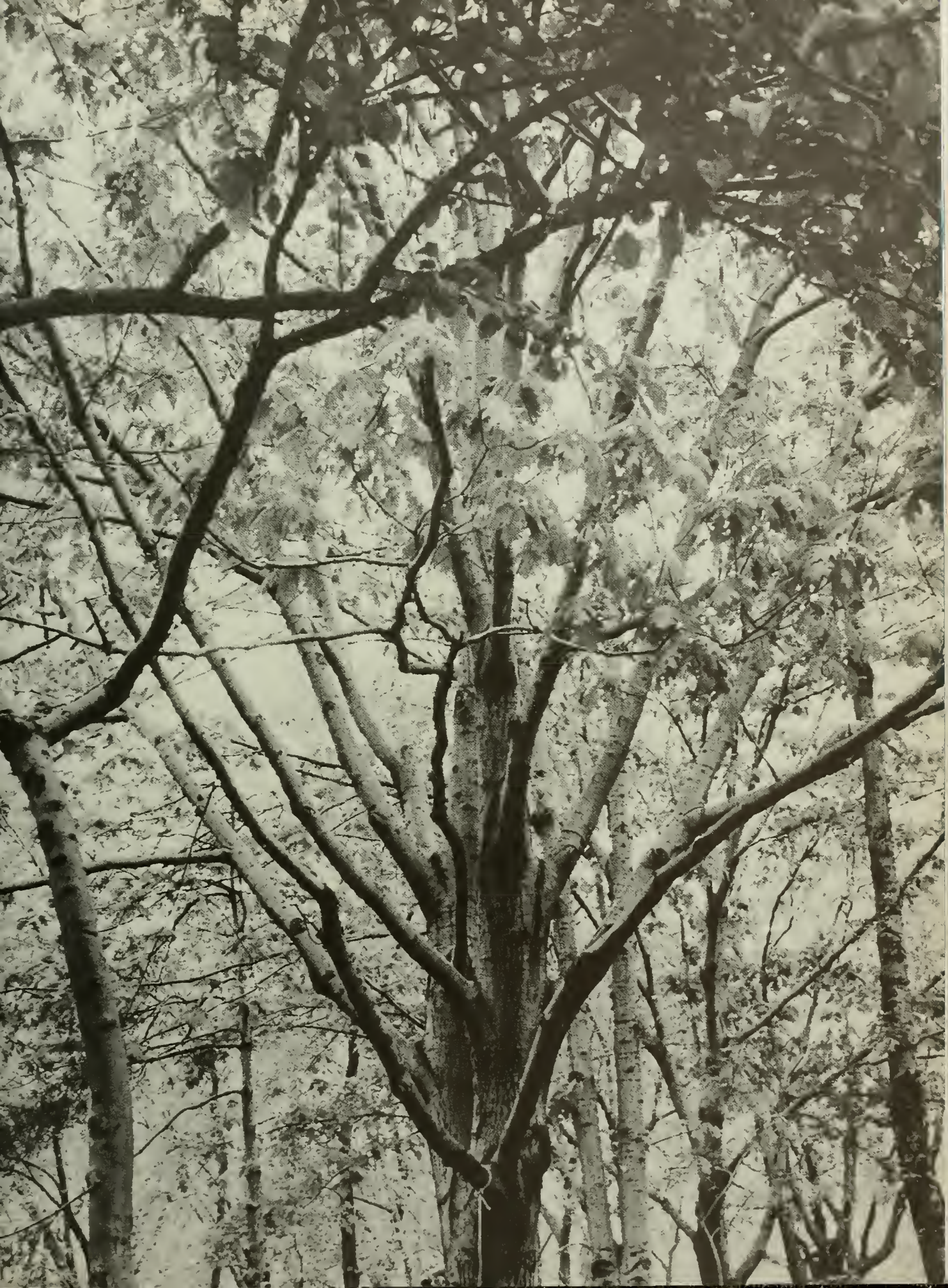
Married: JOSEPH M. CHWALEK and Miss Donna Valerie Longe on October 30, 1971 in Springfield, Mass. The bridegroom is presently serving in the U.S. Army as an electrical engineer in the Foreign Science and Technological Center, Charlottesville, Va., where the couple resides. . . EDWARD E. HOWE to Miss Joyce Essie May Baldwin in Highland Falls, N.Y. on September 20, 1971. They will make their home in Germany where Edward is a first lieutenant in the U.S. Army. . . JOHN A. PELLI and Miss Marcia Karen Mitchell on October 23 in Providence, R.I. John recently joined the Trane Company's Consumer Products Division sales office in Springfield, Mass. Prior to receiving his assignment he completed the Trane Graduate Engineer Training Program, a 10-week course which concentrates on business management. . . PAUL A. PERRON to Miss Mary T. Russell in Springfield, Mass. on November 27, 1971. Paul is employed as a chemist by Scott-Graphics, Inc., in Holyoke. . . RICHARD J. SCHWARTZ and Miss Beth Ellyn Goldman on November 27 in Worcester. The groom is a candidate for his master's degree in computer science at WPI.

CRAIG C. CHASE of Clark, N.J., has been named manager of the Friendly Ice Cream and Sandwich Shop on Main Street in Madison, N.J. . . Army 2/LT. JOSEPH D. HENSEL has completed a 12-week field artillery officer basic course at the Army Field Artillery School, Fort Sill, Oklahoma . . . WILLIAM R. NAAS was recently promoted to Army First Lieutenant at Fort George O. Meade, Md., while serving with the Army Security Agency's support group . . . 2/LT. MICHAEL D. VARDEMAN serves as Safety Officer with the U.S. Army at Fort Hood, Texas.

1971

Married: THEODORE A. FREDERICKS to Miss Mary Elizabeth Martin, September 3 in New Haven, Connecticut. The couple is living in Worcester, Mass. . . STEPHEN P. KATZ and Miss Sandra L. Northrop in Schenectady, N.Y., on October 23, 1971. Stephen is employed by the Morse Shoe Co. in Albany. . . GERALD J. KERSUS to Miss Kathleen M. Dorsey in Worcester, Mass., on October 2. Mrs. Kersus received a degree in executive secretarial science from Quinsigamond Community College, Worcester, and was formerly a secretary for The Thom McAn Shoe Co. The groom is employed by the Naval Electronics Test and Evaluation Facility, St. Indigoes, Maryland. . . JOHN A. LIND and Miss Linda Jean Kelley on September 25th in East Haven, Conn. John is with Harry M. Davis Bros., Inc., North Haven, Conn. The couple resides in West Haven. . . ANDREW B. LISTON to Miss Stephanie Ann Bolton October 9, 1971 in Cabot, Vermont. The bride is a senior at the University of Vermont, Burlington, and the groom is a civil engineer for Thompson-Liston Associates, Inc., in Worcester, Mass.

JOHN A. GIORDANO, who is enrolled in the MBA program at the University of Rhode Island, has been chosen to receive a URI Foundation Graduate Fellowship for this academic year. The one-year fellowship will provide $1,800 at $200 a month for the next nine months. John was recommended for the award on the basis of his outstanding scholastic record. . . GARY J. LARSON has been appointed assistant chemical engineer, Pilot Plant, Nepera Chemical Company, Inc. in Harriman, N.Y. He resides in Crompond . . . Army PFC RICHARD F. LUKAS is serving with the 5th ADA Regiment at Bristol, Rhode Island. He is a crewman with Battery C, 3rd Battalion of the regiment. . . Graduate Student THOMAS A. McKEON attends the University of California at Berkeley. . . JOHN S. MESCHISEN has employment with the Power Authority of the State of New York. . . ABBAS A. SALIM is studying for a PhD at Polytechnic Institute of Brooklyn, N.Y. . . GEORGE M. SIMMONS reports that he competes in motorcycle races and is working on Long Island . . . Peace Corps member ROBERT M. SINICROPE has been assigned to Montego Bay, Jamaica. He teaches mathematics in the West Indies. . . JAMES H. SNIDER works as a research engineer at WPI's Alden Research Labs. He lives in Worcester. . . STEWART T. STOCKING has joined The Trane Company's Consumer Products Division sales office in Boston, Mass. . . DAVID A. TRUE has been promoted from chemical technologist at Salem Harbor to assistant to chief technologist at the Brayton Point facility of the New England Power Co. The facility is located in Somerset, Massachusetts.



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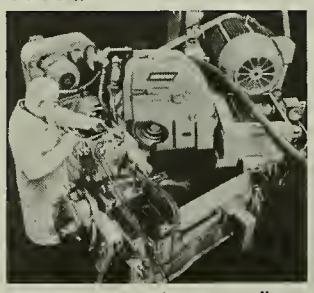

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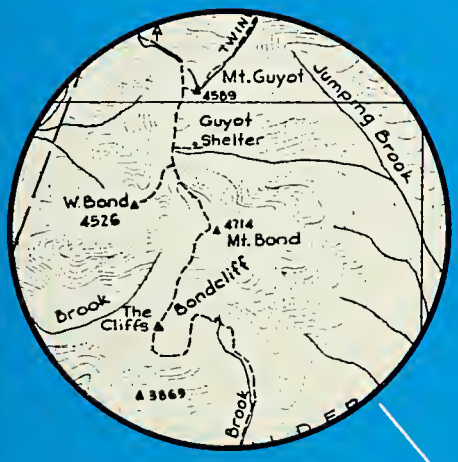

INTERSESSION 1972

Wyman-Gordon is the country's outstanding producer of forged components for America's key industries. Wyman-Gordon has supplied forgings for virtually every aircraft in the skies today, as well as for the Saturn and other space boosters. Equally important is its production of vital components for nuclear and turbine power plants, sea and undersea vessels, trucks, tractors and construction equipment.

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The Next 100 Years

by Ben Bova

I WOULD LIKE to talk about some of the things that may be happening over the next several years, the next few decades, perhaps as far ahead as the next hundred years.

Science fiction is often equated with attempts to predict the future. This isn't exactly right, although lots of science fiction stories have made very marvelous predictions — practically every piece of technology we have today appeared in a science-fiction story at least twenty or thirty years ago. But as Frederik Pohl once said, "Science-fiction predictions are like a broken clock; even a broken clock is correct twice a day." And so many things have been predicted in so many science-fiction stories that they can hardly miss — it's the buckshot approach. The game in science fiction is not to try to predict what actually is going to happen as much as to show the forces at work and show some of the possibilities of the future. . . some of the things that we are all going to have to live with or die with over the next many years.

For example, for many years now science-fiction stories have been worrying about problems of overpopulation. Harry Harrison's book *Make Room, Make Room* deals with a New York City where the population is over twenty million. It's not a very pleasant place. Actually, in the real world it looks like the population explosion, although it is continuing, is beginning to slow down, even in places like Latin America, as the rate of increase in the birth rate is tapering off. We may be seeing soon what Winston Churchill said regarding the Battle of Britain, "This may not be the beginning of the end, but it is the end of the beginning."

The 1972 Lawrence Hull Lecture keynoted the entire Intersession period in general and one course in particular.

Ben Bova is editor of Analog, *the nation's most prestigious science-fiction magazine. A graduate of Temple University, Bova has written more than a dozen books as well as works for motion pictures (THX 1138), educational services, and physical science study committees. He has worked with some of our country's leading scientists and engineers in the fields of lasers, magnetohydrodynamics, and artificial hearts. He has lectured before the New York Academy of Sciences and at the World Science Fiction Convention.*

However, population pressures are still a very serious problem. Let's assume for the next hundred years that somehow we get to manage this. We're going to have a more crowded world. This planet has enormous resources available to it, and I think we can feed ten times the number of people we have today. The real question is not their physical survival as much as what kind of a society is this going to give us? I think many of the political problems we have today in the international arena, especially the unrest in the so-called Third World or in the underdeveloped nations, are directly attributable to the enormous increase in population.

We also have a population-related problem in this country, in that we are polluting the environment to an incredible degree. The really funny thing about pollution is that the problem is solvable by today's technology. There is very little being poured into the atmosphere and into our water that modern technology could not fix. The real problem with pollution is not technological so much as it is social. For centuries, for millennia, the problems that mankind has faced have been very basic, first-order problems: How do I get enough to eat? How do I keep from freezing to death in the winter? We have reached the point, in Western civilization at least, where these problems are pretty well solved for most people. In this nation, for example — although there are many people, far too many, who still do not get a proper diet and who still are hungry — most of us spend more for diet foods than other nations spend on food itself.

We produce an enormous amount of pollution and we very often blame our technology, but it's really a social problem. We want to have electricity and automobiles. We like the ability to move around; we base our whole lives on the ability to zip around 20, 50, 100 miles quite easily. Now we find that, having obtained this ability, we have to pay a price. The price at the moment is pollution. We can have automobiles and we can have electrical power plants; we can have the kind of society we have today, without very much pollution; but then we have to pay another kind of price. For example, there's absolutely no reason for fossil-fueled power plants (which burn coal or oil or natural gas) to be dumping pollutants into the atmosphere. There are perfectly straightforward types of equipment that can

The real question is not, Do we have to choose between electricity and clean air? The question is, How much are we willing to pay for electricity *with* clean air?

get rid of most of the pollutants that they emit. There are new forms of power generation that are inherently low-pollution, but all these cost money. The real question is not, Do we have to choose between electricity and clean air? The question is, How much are we willing to pay for electricity *with* clean air?

Over the next hundred years, over the next ten years, we must learn how to do our economic bookkeeping in a new way. We must tote up *all* the costs of the things we do. Mainly because our world is getting crowded, we no longer have the luxury of dumping our wastes wherever it is most convenient. We must find out just how to handle these systems, who is going to pay for them, and how they are going to be paid. These are essentially social and political problems, and the thing that's interesting is this: If we do develop systems for carefully controlling the pollution of our electrical power plants, or our transportation systems, or ourselves — people — the political consequences of such control could be almost as bad as the pollution itself, though in a different way.

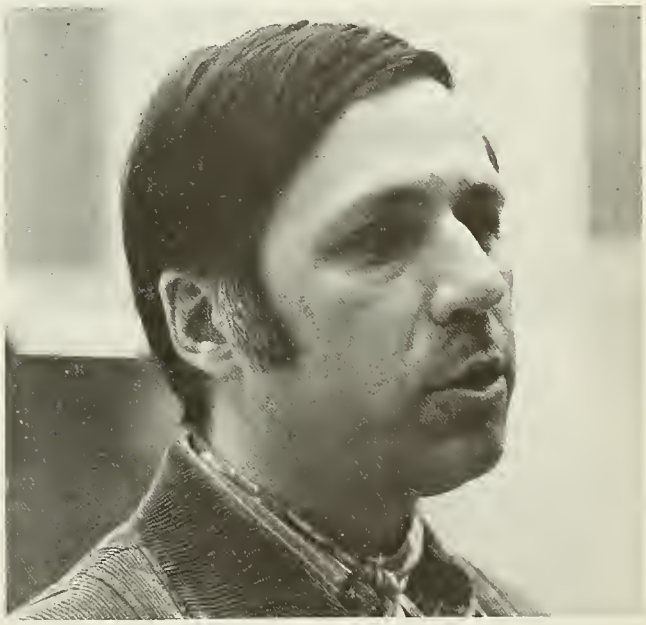
In a city like Worcester, for example, right now we have no political way of controlling the pollution being poured out by the factories and homes and automobiles and busses in the city. There's no single political authority that can march in and tell you to stop polluting or else. True, there are laws aimed in this direction. But suppose we wanted as strong a pollution control as possible, and we did elect or devise a political system in which polluters were very quickly and efficiently taken out of the system — jailed or what have you. This is the kind of political control that could cause other problems, that could lead or be a step toward a totalitarian situation that I don't think any of us really want.

The basic factor of life, of all nature really, is that you always have to pay a price for anything you get. Robert Heinlein, in his novel *The Moon Is a Harsh Mistress,* coined the word *tanstaafl,* which is an acronym meaning "There Ain't No Such Thing As A Free Lunch." Whatever we want we will have to pay for, one way or another, and thanks to the second law of thermodynamics we are always going to have to pay more than we get back.

Now pollution and population problems are things that many people are worried about today and working toward solutions for. Another thing we can look forward to over the next century, I think, is the slow — and in some cases the not-so-slow — demise of cities.

Whatever we want we are going to have to pay for, one way or another, and thanks to the second law of thermodynamics we are always going to have to pay more than we get back.

The very term *civilization* carries with it the idea of people who live in cities. Archaeologists tend to judge the complexity of a long-gone culture by the size and complexity of the cities that it has built. We think in terms of city dwellers being sophisticated, urbane, knowledgeable, and the people who live out in the rural communities being hicks. But I think what's happening in most of our cities is something similar to what happens to stars. A star is born, goes through a life-span, and then eventually dies. The bigger the star, the more spectacular its death. The very largest stars go through tremendous explosions, called supernovas, and eventually disappear completely from the universe. Before that happens, they begin to swell; the central core of the star gets hotter and hotter, the outer envelope of the star swells; and then suddenly the whole thing collapses. If the star is large enough, the collapse is irreversible, and it disappears from the universe into what astronomers have started to call a black hole.



Without attempting to make a pun, I think this is what is happening to our larger cities. I spend several days a week in New York, and it is interesting to watch a city die — and frightening. At the moment, New York is still going through its expansion phase; people are leaving the city — anyone who can, is. Business firms are leaving the city, sooner or later the Stock Exchange will leave. And the people who are being left behind are the ones who can't get out, either because they haven't the financial resources or the knowledge or haven't the right skin color. They are stuck there. The core of the city is getting wearier and wearier, hotter in a sense, and eventually it is going to collapse.

The funny thing is, from the technological point of view we may have reached the point where we no longer need cities. The people who work in most large cities now live outside the city proper. They jump into their cars in the morning, create a horrendous traffic jam, congregate in several buildings in the downtown section, shuffle papers all

day long, get in their cars at night, and create another jam on their way home. What's happening, of course, is that people who live in a dispersed area come into a central point where they can communicate with one another, where they can have access to the information that makes up their job. With modern computer technology and communications, we can foresee an era not too far in the future when it may be completely unnecessary for people to come to one central gathering place.

With computer terminals and large time-sharing computers, we might even see a time when people can work in their own homes and have access to all the information they would ordinarily get in their offices. In fact, we can see an era when you don't need paper at all, paper will literally disappear. You don't have to write things down on a piece of paper and file it in a drawer; you can write it with a light pen on a cathode ray tube and the computer will store it in a holographic memory. Certainly the pocket-sized memory cores of computers now can store much more information than the average file cabinet, and these cores are going to look very large and clumsy compared to the memory cores of future-generation computers. With picture telephones, which will depend largely on very broad-band communications – maybe laser links from phone to satellite to another phone – I think we can begin to see that we can sit in our homes and attend classes or go to work" without ever leaving the house. At most, we will go to one suburban central area where a few blocks' worth of people will gather and conduct this kind of operation. The whole idea of moving hundreds of thousands of people into a central-city urban area for eight hours a day and then moving them out again can just about be done away with if this kind of technology progresses the way we think it might.

With computer terminals and large time-sharing computers, we might even see a time when people can work in their own homes and have access to all the information they would ordinarily get in their offices.

So if we put these two things together, the fact that people are abandoning the cities and leaving behind the poor, the Black, and the other minority groups, and the fact that there is a very good reason why we may not need cities any more, we may find a situation which is new to civilization. In bygone eras great cultures would arise, build cities, and then be swept down by barbarians who lived outside in the hills or the steppes. The barbarians would eventually come in and destroy the cities and the whole cycle would begin again. What we may be going through now is a situation where we are abandoning our cities; the civilized people, the so-called urbane people, are moving out into what used to be the countryside, leaving behind them a trapped population of ghetto dwellers who will some day, more or less by default, become the new barbarians – and I don't mean the term barbarians in a derogatory sense at all. I mean people who are have-nots and who are willing to fight to get what the rest of us have.

The remedial patchwork that is going on in most cities is far too little and may be far too late to correct what could become an irreversible collapse.

If that situation comes to pass, there is going to be a holocaust of enormous proportions. And it will only happen if we really deserve it, because God knows we have the brains and the technology and the wealth to correct this situation. But unfortunately I don't see any real trends now that are at work to correct it. The remedial patchwork that is going on in most cities is far too little and may be far too late to correct what could become an irreversible collapse. Certainly I think a city the size of New York has had it. Frankly, so do many many business firms which are leaving New York and moving out.

That's a gloomy aspect of what may be coming up in the next few decades. But if we look outside of our cities, outside of our own planet, we may find something much more exciting and perhaps much more cheerful.

I think before the end of the century it is almost inevitable that we will find strong evidence of life on other worlds. As a matter of fact, several investigators have already found organic chemicals in the soil returned from the moon. This does not mean there are living creatures on the moon, or even that there once were living creatures on the moon. It simply means that the necessary building materials are there, if the conditions were right, for a chemical evolution to lead to the formation of life. Our Mariner 9 vehicle is getting some clear pictures from Mars now that the sandstorm that greeted it has died away. There is no strong evidence yet of life on Mars, but there are indirect, nagging kinds of questions: Mars has seasons much like the Earth, although Mars' seasons are twice as long as ours because its year is twice as long. In the Martian spring, the polar cap melts (or at least disappears) and some of the dark patches on Mars change color – various astronomers have called them blue-green or greenish. Some evidence has been found for the kinds of light absorption that come from green plants, on Earth. This is very tenuous evidence and might be completely wrong, but at any rate, there are some indirect hints that perhaps what we may be seeing on Mars is a form of life.

But one has to be very careful about this sort of thing. A few years ago, a couple of astronomers using the Mount Wilson telescope – a 100-inch telescope near Los Angeles – found strong evidence of a heavy concentration of nitric oxide in the atmosphere of Mars. When they published their findings, they concluded that obviously, because of the dangerous levels of nitric oxide in the atmosphere, Mars would not be a fitting abode for human life. Other astronomers checked their results and found out that the

There is no strong evidence yet of life on Mars, but there are indirect, nagging kinds of questions.

Mount Wilson telescope was looking through the atmosphere above Los Angeles and the nitric oxide it saw was from the automobile pollution in Los Angeles. So they concluded that obviously Los Angeles is not a fitting abode for human life.

But looking even beyond our solar system, for the past ten years astronomers have been getting radio signals from large clouds of interstellar gas and dust. These radio signals are completely natural (they are not intelligent signals) but they are the kind of radio wavelengths that would be emitted naturally by some rather complex molecules — hydrocarbon molecules principally, also water, ammonia, and some other ingredients that biochemists get excited about because these are the kinds of things you need to make living creatures. It appears that in these large clouds of interstellar gas and dust, the necessary chemicals for life are present quite naturally. If you want to take the kind of jump that maybe only a science-fiction writer would take, perhaps this means that the formation of life is as completely natural an event as the formation of a new star. If that is true, then the chances for life are enormous, not only within our solar system but in other solar systems all over the Milky Way galaxy and in other galaxies as well.

This creates some interesting puzzles. Suppose over the next one hundred years we get some unequivocal evidence of intelligent life, such as a radio message that is clearly quite artificial, or perhaps an actual visit. After all, people have been seeing flying saucers since Biblical times — maybe they really are something from off this planet, although at present I don't think anybody has produced any evidence at all that shows that saucers are extraplanetary objects.

The distances between stars are vast. The distance between the earth and the sun averages out to about 93 million miles. If you shrunk down to an inch, the nearest star, Alpha Centauri, would be 4 1/3 miles away. The stars are millions of times farther away than the distances within our own solar system. This means that, living with what we know of the laws of physics, it's hard to envision very much commerce between the stars. If there is any travel between one star and another, they are essentially all going to be one-way trips. Distances are so vast that a trip to Alpha Centauri would take thousands of years to get there by the kinds of rocket systems we know today. Assume that you can be frozen cryogenically in a bath of liquid helium and then awakened and brought back to life without any damage to your body; you could sort of sleep away the years in transit between here and Alpha Centauri. You get there and have a good time — you arrive on Saturday night and go to the local dance — and you come back again. But thousands of years have passed on Earth. Even though you come back to your starting point, so much time will have elapsed that it's a totally different world.

Just who would go on such journeys? We've all read lots of science-fiction stories about star ships blasting out among the stars and the far reaches of the Milky Way galaxy and even beyond. But let's think about it in realistic terms: Who would actually go out on such a star mission? I tend to think the same kinds of people who got pushed out of Europe for various political or religious reasons. Essentially, you have the next centuries' versions of the Puritans or Pilgrims, the kinds of people who founded this country. If anyone goes at all, it will be the people who don't intend to come back, the people who want to build a new world.

And if you take a look at the direction this world is going in, in the next generation or two (unless we improve things) it might be quite attractive to take off and head for the stars; it might be the thing to do. Certainly it would be an interesting form of protest.

There are two things in the offing, one quite close and the other a little further off, that could seriously change the way we live today. The first one is the laser. You've all seen motion pictures; I think *Goldfinger* was the laser movie par

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excellence, in which James Bond's adversaries use a laser to melt down the door to Fort Knox. Although they don't look quite the same, lasers of that power now exist. They don't go rattling around in trucks, they are too big and clumsy, and I think the people at Fort Knox aren't really losing too much sleep about it. On the other hand, efforts are being made in both industry and the military to see just what lasers can do and where they will be useful. Back when I was young, we all read Buck Rogers with his handy-dandy disintegrator gun. Recently there was a cartoon in a magazine called *Laser Focus* in which a white-coated lab technician is holding a pistol-like affair and he says: "At last, a hand-held laser weapon!" And from the stock of the pistol is a cord that leads to about six vans of electronic equipment. That's about the stage of laser technology right now. But it won't stay that way.

The Department of Defense likes to drill holes into anything that walks, flies, moves — that's their job, that's what they get paid to do, and lasers will help them do it better.

Eleven years ago there were no lasers; five years ago the most powerful laser you could produce made a couple of watts. Today in the unclassified literature there are papers that show lasers of 60 kilowatts of continuous output. Sixty thousand watts. That's enough to make Ford Motor Company interested in devising a laser system that will weld the complete underbody of their Montego automobile in thirty seconds. They would do it on an assembly line, just *zap, zap, zap,* eight hours a day. Well, most lasers don't work eight minutes without failing in one way or another, but they are getting to the point where they will be industrially useful. The Bureau of Mines and the Department of Transportation both like to drill tunnels through very hard rock, and lasers may be the way that they do it. The Department of Defense likes to drill holes into anything that walks, flies, moves — that's their job, that's what they get paid to do, and lasers will help them do it better.

There's an interesting thing here, you know. We've all been under a pall of nuclear threat. We are within thirty minutes of complete wipeout. There's no major population center in this country that is not targeted. There are Russian missiles and there will be Chinese missiles — and God knows there may even be Mexican missiles some day — ready and aimed at our cities; and of course we have missiles with Russian and Chinese names on them. These missiles are to date the ultimate weapon. Although an enormous amount of research has been done in developing counter-systems, anti-missile systems, no one has seriously suggested that we could stop a determined Russian missile attack. And I think that the Russians know that they could not stop a determined attack of ours. The offense has all the cards right now, or at least enough to make it a one-sided game.

High-powered lasers are going to be much too expensive to use on "soft" targets, targets that could be easily handled by other weapons. But these ICBM's are very difficult targets, and it may be that high-powered lasers will be the kind of weapon that breaks this nuclear deadlock. Whether that leads to a better world or a more difficult world is hard to predict. Right now the possibility of death in thirty minutes has kept the U.S. and Russia carefully away from each other. The wars that have been fought since the Second World War have all been in the underdeveloped nations, proxy wars. Although we've sent our own troops in (because we're the good guys), the Russians (who are nefarious and Communist and atheistic) have been clever enough to get other people to do their fighting. Now if this nuclear deadlock were broken, if either the U.S., Russia, China, or any combination of the three had a missile defense, it's interesting to speculate on just what would happen. If one side found itself fairly safe from missile attack and thought the other side did not have such a defense, they might be very sorely tempted to pull what the Pentagon calls a preemptive war: that is, blow the other man out of the water before he can do anything to you. On the other hand, if both sides develop this kind of defense simultaneously, it negates the whole nuclear holocaust business, and maybe we can start living with a little more freedom and a little less fear.

Years ago I wrote a story called "The Next Logical Step" in which something like this was posed. The purpose of the story was to show that if you have this kind of weapon the wisest thing is to make sure the other side gets it too. In the story, we hired a spy to send our information over to Russia. It's much too dangerous to have one side ahead in this kind of a race.

In a more positive vein, we can envision rockets in which the main boosting power for lift-off from the ground comes from a very high-powered laser. Envision a rocket vehicle which is about 50 percent payload and 50 percent a tank of hydrogen. With a laser to heat this propellant we can achieve a much higher temperature than we can get from combustion, by burning the hydrogen with oxygen. The higher temperature will give a higher exit velocity and, if things are worked right, more thrust. It might be possible to boost very large vehicles into orbit with a laser system that sits on the ground. Essentially what we've done is taken the first stage of the Saturn rocket, taken the energy that that gives to the rest of the rocket, and delivered it in the form of a laser beam so that a lot of the very expensive and bulky equipment stays on the ground; and the amount of vehicle that actually flies can have much, much higher payload ratios.

We have already started as of January 7 what might be considered the second generation of serious rocketry. The space shuttle is an effort to make a reusable rocket. Currently we throw away almost everything. By the time we get our men back from the moon, there is very little left in the way of the original Saturn vehicle. Just a used-up reentry vehicle, the command module; everything else is

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thrown away. The space shuttle will be a rocket that can be reused time and time again. Therefore, the cost of putting things into orbit will be much cheaper. If this laser propulsion scheme ever works, the cost of putting things into orbit will become cheaper still, and it may get down to the point where it is as cheap as an airplane ride. At that point, lots of interesting things can be done in orbit, including perhaps putting our breeder reactors into orbit, where even if they go haywire, they won't damage the environment here.

A breeder reactor takes a low-grade fissionable material, upgrades it, and essentially produces more fissionable material than you started with. It's an attempt to get around the fact that there is only so much uranium in the world and we're going to use it all up unless we learn how to do something better. If we really are worried about the dangers of breeder reactors, we can put them in orbit, but only if it's cheap; and I think the cost of putting things in orbit can go down enormously.

As we improve the efficiency of rockets, perhaps with different technologies, the cost of doing things in orbit will go down. Whole new manufacturing industries might begin in orbit.

In fact, Arthur Clarke made a calculation once that showed all it really costs in terms of energy to put a man on the moon is only a few dollars. He figured out how many kilowatts of energy you need to expend to lift a human being from the earth and deposit him gently on the moon, and then he figured how many dollars it cost to get that energy from the electric company. The problem is that electricity is not energy in a usable form. We use some rather inefficient rockets to put people into space. As we improve the efficiency, as we learn to handle this whole problem with different technologies perhaps, the cost of doing things in orbit will go down. Whole new manufacturing industries might begin in orbit.

Today, for example, in the electronics industry we pay an enormous amount of money to produce vacuums. It's hard to get a good vacuum here on Earth. If you have worked in a research facility where you need a vacuum chamber, you find that it's expensive. Just a hundred or so miles over our heads is a better vacuum than we've ever produced on the surface of this planet. The only problem is that it's expensive to go there. Well, the day is coming when it won't be so expensive, and perhaps large segments of the electronics industry and maybe other industries will be put into orbit. Later this year the first Skylab missions will begin. This is an attempt to see just what men can do on extended orbital missions. Astronauts will be up for two or three months at a time. There's a whole range of tasks that they are going to tackle, including trying to test some manufacturing methods. You know, you can make very nice ball-bearings in a zero-G environment out of molten metal because it forms perfect little spheres. This is just a little trick, but a lot of these ideas may develop into new industries, and we may learn how to do a number of things in orbit that we couldn't ever dream of doing here on earth.

Eventually we will see orbital facilities that include large hospitals. There are a large number of people here on Earth who die because their heart muscle is not strong enough to pump blood through their bodies. If that blood didn't weigh anything, these people might live. Now we have the technical means, or will have by the end of the century, to save these people, providing we can get them in orbit without overtaxing their hearts. But then that brings up an interesting social question: when do you allow somebody to die? We are now working on all sorts of medical devices – artificial hearts, kidneys, lungs, and what have you. In most hospitals the decision on when a person is dead is essentially a question of when do you turn off the electricity. Here technology is posing a problem that people have never really had to face before. And you find a good way to get a lawyer and an M.D. arguing is to ask them to define death.

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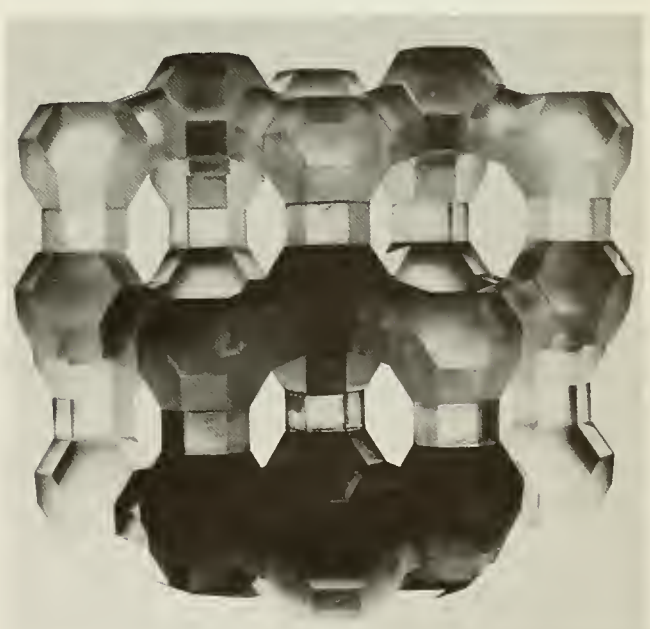
Another part of technology that is going to change the world considerably is the advent of nuclear fusion. Part of the electricity generated in this country comes from nuclear fission plants, in which heavy atoms like uranium are split and energy is produced. Nuclear fusion takes light atoms of hydrogen, puts them together to form helium, and this releases energy. Fusion is the process that causes the sun and the stars to shine. The only thing you have to do to



make a fusion reactor work is reproduce here on Earth the conditions in the interior of the sun. Quite a trick! You need a plasma — this is a state of matter that is different from a gas, it's an electrically conducting gas — you must produce a hydrogen plasma at anywhere from 20 million to 100 million degrees and just hold it together somehow (the usual way to do it is with a "magnetic bottle"), hold it together long enough so its gives off enough power to make the whole thing worth doing. The best physicists in the world have been working on this since about 1945. They are trembling on the edge of producing a sustained fusion reaction in the laboratory. This is one area where scientists from all over the world are cooperating. Russian, British, Indian, American, and I think eventually Chinese, scientists are all working together and sharing their results. It is also an area that is curiously underfunded considering the importance of the results. The United States today spends about $150 million per year on fusion research. This is about the cost of a few jet fighters, or the spare parts for the Hawk missile per year. I won't even compare it to our "bubble gum" expenditures — say cigarettes — there is no comparison at all.

The best physicists in the world have been working on this since about 1945. They are trembling on the brink of producing a sustained fusion reaction in the laboratory.

If we can produce a fusion reactor, we will be able to take its "fuel" from the ocean, a heavy form of hydrogen called deuterium, and produce electricity from it. There is enough deuterium in the oceans to produce a million times more electricity than we use now for the next billion years, so that fuel will be relatively cheap and abundant. We will be able to revolutionize the way we live. The fusion process is rather low on pollution; most of the radioactivity produced is contained right within the reactor itself. The major waste-product from the fusion reactor is helium, which we can use to blow up balloons or cool down superconducting magnets, and the power output is going to be staggering. We may see a time when power will be cheap enough to desalt sea water in California and pipe it inland to the Mohave Desert.

Something else that is important is that we will be able to stop digging up coal and drilling oil wells and even digging uranium, because the power source will come from the sea itself and can be had very easily. More than that, a couple of AEC physicists have proposed something called the fusion torch, which essentially takes the tremendous energy of the fusion plasma and uses it as a garbage-disposal unit. But here the garbage could be anything you want. You throw in an automobile (it's a little more complicated than I'm going to make it here) and you produce a plasma of iron atoms, chromium atoms, carbon atoms, what have you, which can then be separated out into pure elemental forms so you end up with a box of pure iron, a box of pure chromium, and whatever else is there. This means that we can recycle things with a vengeance; it means that we may not need to do much more mining for resources, especially for metals. Even if it's only half as good as promised, it could have a decided effect on the way we handle our economy and the way we handle our environment.

With the fusion torch, we may not need to do much more mining for resources, especially for metals. We can recycle things with a vengeance.

People have talked about fusion as being a source of almost limitless power, and I think that can be true. It will eventually be very cheap power as well, and I think this is going to be the key to changing the way we live. The important thing to me is that it will be power with very, very little pollution, and this I think will be the really important change. We may have reached a point, if we can achieve fusion, where we have broken through and can have the kind of technology that we want without gutting the planet any further. And that would be very worthwhile doing.

Now all of this is very interesting, but perhaps the biggest menace that we face is something going on right now in our biology and chemistry labs. This is the potentiality of something called genetic engineering. Over the past twenty years the biochemists and geneticists have essentially cracked the genetic code. They know now how the reproductive material in your body works, how it produces more of you. If you watch television and you read the papers, you see advertisements by the National Dairy Council on how "There's a new you coming every day," how every day the DNA in your body is making more of you. You are ingesting all sorts of things (hopefully milk), your digestive system breaks these down into amino acids, and the DNA in your cells realigns these amino acids, puts

them together like a different jigsaw puzzle and produces more of your own particular kind of protein.

Now geneticists and biochemists are learning how to do this in the laboratory. The hope is that eventually they will be able to spot defects in your genes, your reproductive chemicals, and correct them. For example, there are some birth defects that could be corrected while the unborn child is still just a couple of cells big. If this could be done it would be a tremendous boon; but consider the consequences.

It may be possible to produce a perfect human being: physically perfect, mentally as brilliant as you can make him. It could also be possible to produce a race of very muscular but dim-witted slaves. This is rather far-fetched and nobody really knows how to do it today. But the possibility is there. The power is there, when we can begin to tinker with our own heredity, to produce the kinds of people we want in the colors, sizes, and shapes that we want. This may be more power than any political system that we can think of today has a right to own.

The power is there, when we can begin to tinker with our own heredity, to produce the kinds of people we want in the colors, sizes, and shapes that we want. This may be more power than any political system that we can think of today has a right to own.

Many of the world's leading biochemists and geneticists are already asking themselves and their colleagues and even the public: What should we do? Should we continue these lines of investigation? How do we handle this power once we have it? A very basic question arises here, on how we are going to deal with the science and technology that we have developed.

There are many people who look at the world as it is today, with the problems of war, pollution, population, and everything else, and say that technology may not be to blame for all of it but certainly technology and science have played a very large role in producing these problems and therefore should be turned off. I don't know of any way of turning off science and technology without killing most of the people alive today. This planet can't support three going on four billion people without the kind of technology that we now have. We have grown accustomed to a very strong technological society. We eat foods that are brought from thousands of miles away, we wear clothing that is produced in factories rather than farms, we travel and live in an energy-rich society. We live longer, eat better, are cured of diseases, get old enough to pose problems such as should we give a person an artificial heart or let him die. These are all new problems because this is the first time people are living this long in large numbers, large enough to make it count. If we did turn our backs on technology, most of the people in the world today would die; they would starve or die of disease.

If we turn our backs on technology, most of the people in the world today would die. I don't think there is any road back. The question is: Where do we go from here?

I don't think there is any road back. The question is: Where do we go from here? We can find many, many potential scenarios for what the future is like in science fiction. Many people have called science fiction escape literature. Isaac Asimov once said, "Science fiction *is* escape literature. It's escape into reality. It's tomorrow's reality." Not all of those stories are going to come true, but some of them are pretty close to the truth. If we want to take a look at what's coming up, a preview of coming attractions, science fiction is a reasonable place to look.

Finally, I would like to quote something that Prof. Frederick Smith in the School of Design at Harvard said once. He was mumbling about the dangers of pollution, overpopulation, and war, many of the things I've talked about here, and someone said: "Well, it really looks like man is doomed." And Professor Smith said, "Yes . . . but he's doomed to live." None of these things are going to kill everybody, and since we are going to live we had better learn how to do it the best we can.

"the reality was better than the dream . . ."

INTERSESSION 1972

by Ruth Trask

JANUARY 1972 WAS NOT a usual month at WPI. Prof. David P. McKay directed musicians playing his original musical score at the Higgins estate. Graduate student Robert C. Rittenhouse was the first student member of his mountaineering group to reach the summit of Wildcat Mountain in the White Mountains of New Hampshire. (Temperature reading: −11 degrees!) And college trustee John W. Coghlin of the class of 1919 visited the Brotherhood of the Spirit commune. All three men pursued their diverse activities while participating in one of the brightest facets of the WPI Plan – Intersession 1972.

By any method of measurement, Intersession (a creative approach to learning) was an astounding success. Critics of the Plan in general and Intersession in particular might well have second thoughts. Their basic thesis was: "You'll never be able to get undergraduates to do anything they are not specifically required to do. In January you'll see an empty campus. Everybody will be in Fort Lauderdale."

January came and everybody was *not* in Fort Lauderdale. Over 70 percent of the student body signed up to take the purely voluntary three-day-a-week galaxy of courses that constituted Intersession. Professors who were worried about "no-shows" found themselves pleasantly concerned with "more-shows." Prof. Donald N. Zwiep expected sixteen students for his "Refresher Course for EIT Examinations." Forty-two showed up! Prof. Donald Johnson and Prof. Arthur Back had to provide extra last-minute transportation for the overflow of people who appeared to take their "Technology and the Community: Old Sturbridge Village – A Case Study in Social History."

Sturbridge

Enthusiasm was the basic thread that ran through all of Intersession. The Sturbridge trip is a case in point. A more dismal day weatherwise could scarcely be imagined for the outdoor venture. Fog shrouded the Early American community as the WPI contingent slogged through boggily "authentic" unpaved streets to the distant farm site.

Once at their destination the group members attentively listened to a sometimes scholarly, sometimes witty, and invariably informative dissertation on "Sheep shearing and wool scouring prior to 1840." (Would anyone present ever forget the mind-flipping fact that only four generations ago sheared wool was "washed" in boiling animal urine which incredibly forbearing workers agitated in a huge vat, usually by hand, but occasionally by foot?) Their enthusiasm dampened neither by the pungent barnyard lore nor the fine falling rain, the participants made their way to the spinning room.

Following a detailed discussion of hand processes and subsequent mechanizations utilized in the early days of the American wool industry, the group toured a 140-year-old wool-carding mill that was previously located in Maine. All were amazed to learn that the wood-rollered carding machine had been in active service right up through the 1950's and was still in workable condition today.

Sturbridge, with its meticulously restored buildings and workable artifacts, was an exciting and memorable introduction to Intersession. It gave the "Now" generation an opportunity to see how things were actually done way back "Then." It also helped to create a better understanding of how today's industrial society came into being.

Fiction Into Films

Students enrolled in Prof. Arthur Kennedy's popular course, "Fiction Into Films," were treated to the film version of John Steinbeck's powerful novel, *East of Eden*. The questions posed by the decades-old novel and seventeen-year-old movie still seem highly relevant to family life situations today. For example should a child be made to feel he is unloved or unwanted because he is "different" or allegedly "bad"? What about showing favoritism to one child at the expense of another? Can a parent's fictionalizing the past ever be justified?

These questions made up the warp and woof of the Steinbeck novel and did not suffer too much when somewhat loosely translated into the stunning film version.

The film forcibly brought the trials and tribulations of the beleaguered Trask family into full focus for the rapt audience. At the conclusion of the film nearly everyone, from football player to co-ed, walked rapidly and misty-eyed toward the exit.

"Oh," a girl breathed. "James Dean. He was wonderful."

Some of the older feminine observers swallowed audibly. A half a generation ago, before Dean met his untimely death, they had felt exactly the same way. On the subject of one of the most appealing of yesterday's heroes there appeared to be no generation gap.

Antennas

After a directional antenna system has been designed and built for a broadcasting station, the FCC requires that its performance be proved. This regulation provided an excellent opportunity for the students in Prof. Donald Howe's course, "Design and Testing of M. F. Directional Antenna Arrays," to test classroom theory against the natural elements and the variable and often unknown factors encountered in real life.

The second day of the course was devoted to determining the signal strength of the WORC radiated signal in a due north direction. Since the strength of the received signal at any point is a function of the characteristics of the terrain and the distance, as well as of the actual signal transmitted, the group had to make many measurements at distances from one-half to twenty miles away.

Prof. Howe was scheduled to take delivery of a new measuring instrument, but it did not arrive in time. Instead, the tests were conducted with an old set built in 1933 by Professor Emeritus Hobart Newell, '18, for radio station WTAG.

It was a rather strange caravan: two cars filled with students and topographic maps, followed by Prof. Howe's Saab decked out with an old-fashioned loop antenna pivoted on the outside and the inside crammed so full of equipment that there was barely room for a second person to take notes. Whenever the lead car found a good place to measure — every half mile or so, where the area was free from overhead wires — the caravan ground to a halt. Hasty conferences were held, punctuated by the emergence of a hand from the Saab's window to turn the loop in the process of measuring the field strength.

"It was quite a trip," Prof. Howe recounts. "In our zeal to keep right on the line, we went through a pig farm and another time almost got mired in an ice covered mud-hole on a narrow wooded road. At one point we almost had to be bailed out for trespassing on a private road."

As the group made its last measurement, the failing sun allowed some sky-wave flutter to interfere. Exhausted and satisfied, the group made a bee-line back to WPI for supper.

The results were plotted that evening, and they hardly resembled a Sommerfeld ground-wave attenuation curve for New England "standard" soil. But the students were able to support WORC's claim that their antenna was now radiating more efficiently than when it was originally built. And the "bump" on the curve provoked a lot of discussion of reasons why the theory is inadequate to cover actual operation of such antennas.

Melodic Structure of Indian Classical Music.

The Commune

A hand-painted sign saying *No Drugs, No Liquor, No Smoking* greeted students taking "Living in a Commune" as their bus pulled up before the purple Colonial house. Nearby stood a huge natural-wood dormitory roofed with rainbow-colored shingles. Between the dormitory and the house stretched a muddy parking area scattered with a variety of nondescript vehicles in various stages of repair. The bus parked and 31 representatives of WPI got out. After a circuitous route from Worcester to Warwick, Mass., they had finally made it to The Brotherhood of the Spirit Commune.

"Ted," tall and tousled, met the group and led them into the dormitory living room where they were seated on long wooden benches. A stunning blue and purple tapestry adorned the main wall. Open balconies ran along the other sides of the two-story room.

"We built this place," one of the bearded members said. "We tore down a barn and used the beams. Even the siding." He looked proud, as he had a right to be. The building was rustic and, sanitarily speaking, downright primitive, but it was sound and quite beautiful with its old hand-hewn atmosphere deftly highlighted by splashes of modern art.

"Michael," who appeared to be one of the major spokesmen for the commune, explained what The Brotherhood of the Spirit was all about. He said that three years ago an 18-year-old drop-out had started the community as an alternative to American life as we know it today. A spiritual philosophy (and belief in reincarnation) was the basis on which the commune was built. Anyone in the community could believe in whatever "God" he wished as long as love and brotherhood were the cornerstones of his

Living in a Commune—photo by Kenneth Johnson, '73.

belief. If anybody had any gripes about how things were going in the community, he had to rid himself of them in encounter-type discussions. There was to be no violence of any kind. And no competition.

At first the members tried to live exclusively to themselves but soon discovered that they had to branch out in order to survive. Their most successful "branch" to date is their rock group, Spirit in Flesh, which has appeared on national television and has cut a number of hit records. The band is now completely self-supporting.

Commune members also hold part-time jobs in surrounding towns to help bring in extra revenue. They grow their own vegetables, keep a cow, and did have some laying hens. "When the hens stopped laying, we had to get rid of them," a girl whispered. She laughed. "Tonight we're having chicken soup!"

Michael, his talk finished, told the students they were welcome to go anywhere they wished on the premises. They were free to go through the living quarters, the art studio, the jewelry craft room or over to the purple house where the kitchen and dining facilities were located.

Hospitality was extended to the students everywhere they went. Ideas flew thick and fast between the young wanderers who had had to flee from the pressure of established society and their visitors who were trying to make their way within it.

"What about your parents?" the members were asked.

"We keep in touch," some replied.

"How do they feel about your being here?"

"Heart-broken, but better than before."

"Before," it was learned, was when they were on drugs. Virtually every person living in the commune had been involved with the drug scene and had come to Warwick looking for a second chance.

"I am a high school drop-out," a pretty blonde in the jewelry room said. "I lived all over the country before I heard of The Brotherhood of the Spirit." She smiled. "I'm glad I found it."

A vivacious black girl wearing a blue bandanna told a similar story. "One day I came up from New York City," she said. "I just stayed on and never went back." She pointed to an orange velvet board covered with striking multi-colored jewelry. "That's what they taught me to do here," she went on. "I never knew I could do anything like that before."

Up in the artist's loft yet another tale was being told. An intense young man with deep-set piercing eyes spoke quietly yet joyfully about the success of the band. "Not that I care about seeing my puss on some magazine cover," he explained. "It's just that I'm glad we're working things out right together. Maybe, somehow, our music will help spread the message of peace and love."

His attention turned to his female assistant and the Christmas card samples spread out on the work table. Somebody had mentioned how uniquely beautiful they were.

"We had to stop making them," he said. "After making and selling 5,000 of them we simply couldn't do any more." Again the feeling of accomplishment was apparent in his voice.

So, the self-imposed exiles of The Brotherhood of the Spirit are making it in their own way. They are now rushing toward life and not from it. Their way is not easy. It is bitter-sweet at best — devoid of creature comforts and primarily unplanned and unpredictable. But there is a spirit of true brotherhood in the community. And the community is made up of young people who are not all that different from those we see every day.

Urban Simulation Gaming.

The Creative Imagination in Philosophy and Poetry, with trustee H. Ladd Plumley participating.

WPI trustee John W. Coghlin had an experience at the commune that aptly illustrates the point. Interested and affable, he spoke with as many members as he could throughout the afternoon and invariably asked, "Do your parents approve of your being here?"

"No," was the usual answer, and Coghlin responded with "Just keep in touch with them."

"And what about you? Is it all right with your folks that you're here?" he asked the long-haired youth standing next to him.

"Yes sir," the boy replied with a grin.

Coghlin, taken aback at this development, asked the boy how long he had been at the commune.

"About twenty minutes. I rode up on the bus with you."

It was time to go. The bus pulled out of the parking lot past the hand-painted sign saying *No Drugs, No Liquor, No Smoking.* Just for a fleeting moment it looked as though one more taboo had been added in parentheses. It looked like it said *(No Soap).*

Special Relativity

At the time he proposed his course in special relativity, Prof. Van Bluemel said, "If we get five students we'll hold the course; if we only get two we should cancel it." Prof. Bluemel's expectations received a severe jolt when Intersession registration was completed: seventy students registered, and over fifty remained throughout the course.

Originally planned as a seminar, Profs. Bluemel and Robert Long were forced into more of a lecture presentation.

"I was surprised, though, at the amount of really fine give-and-take that developed. Some of the students really didn't seem to have expected much from us. But they did seem surprised that Bob Long and I would sit down on the

lecture table and more or less shoot the bull with the kids about the subject," Bluemel recounts. "Of course, I think it helped that it was a subject in which the students could very easily come up with questions that would stump the professors!"

The students were quite interested in the paradoxes of relativity theory, such as the increase of mass and what happens to clocks when traveling near the speed of light. Prof. C. William Shipman commented, "It's too bad we can't take relativistic field trips to demonstrate some of these phenomena."

Construction of Harpsichords.

Career Development

"I didn't realize that I wave my hands like that when I talk," the disgruntled future job-seeker said. "When the recruiters get to me I'm going to keep my hands folded on the desk. Or in my lap." He looked at his image on the closed-circuit TV set with considerable disgust.

"Your voice sounded good," the fellow sitting next to him remarked encouragingly.

"But you could be a ventriloquist," observed a critic. "You hardly moved your lips. I could *hear* you talking. But I couldn't *see* you."

The praise and the criticism were all part of Dean William Trask's "Career Development" course which was designed, in part, to help students see themselves as others (especially recruiters) see them. Those taking the course had each been subjected to a pseudo-job interview given by Prof. Lyle Wimmergren who had purposely spared no punches in his probing and sometimes highly personal line of questioning. "Have to keep them on their toes," he explained.

The results of the televised individual interviews brought a number of truths to light.

"You answered with too many vague generalities," a young man was criticized. "Know your strengths and weaknesses. Know what you have to offer a company."

"And it wouldn't hurt if you read the literature the company sent you more thoroughly before going to the interview," another added.

"Did I do *anything* right?" the boy asked despairingly.

"Your clothes looked neat, but that hair . . . " came the reply.

"My hair?" he groaned.

"It should be cut. Most recruiters are over forty and they don't like long hair. I'm not sure why. They just don't."

The boy shook his head.

At last the morning of self-evaluation was over and everyone filed out into the hallway. The student who had been particularly distressed over his TV performance looked surprisingly happy. Almost smug.

"What happened?" he was asked. "Did you just get a good idea on how to handle your real job interview?"

"Yes," he beamed. "*I'm* going to graduate school!"

The Tudor Interlude

Sixteenth-century playwright John Heywood would have been proud. His comic interlude, *The Play of the Weather*, was performed with appropriately irreverent gusto by drama students studying "The Tudor Interlude" during Intersession.

Staged in the great baronial hall at the Higgins estate, the production retained much of the atmosphere of the original setting. Music specially composed and directed by Prof. David McKay set the heraldic mood of the piece and the dazzling period costumes also added flavor and authenticity.

The Play of the Weather (1533) is a mild satire on Henry VIII and spotlights the absurdity and selfishness of English society during his reign. It was written to be performed before the king and his court.

The Tudor Interlude.

Students had a relatively free hand in recreating the work as there are no surviving stage directions or production notes for the play. Under the direction of Prof. Theodore Packard, they experimented with various levels of action and integrated into the production such innovations as the canopied platform (the acting cart of strolling players). They also assisted with the staging, costumes, and lighting, the whole project being coordinated by Prof. Edmund M. Hayes.

The end result of all these efforts was a glittering and entertaining performance fit for a king. Yes, John Heywood surely would have been proud.

Bachelor Cooking

Eleven prospective "Galloping Gourmets" developed skill in the culinary arts (as well as expanded waistlines!) while taking "Bachelor Cooking: Survival to Gourmet."

Under the creative tutelage of Mrs. Charlene Sokal and Dr. Lance E. Schachterle, the eleven students learned the basics of selecting, preparing, and serving a number of interesting, well-planned meals. The emphasis was placed on quality but there was always a generous quantity of food available. (Of course it's only a malicious rumor that during one session 20 pounds of chicken was purchased, prepared and promptly consumed!)

One of the first on-site lessons took place in a local supermarket where students were instructed in the why's and wherefore's of shopping for meats and produce. Later, in a spice house, they were introduced to the heady world of herbs and spices so that they would be better able to understand how the taste of a dish is altered by substituting or omitting various seasonings.

To more aptly illustrate differences in taste, a cut of beef was prepared in class by four various methods: basic beef stew, beef braised in beer, boeuf bourguignonne, and beef marinade. The "tasteful" experiment was an unqualified success. There were no leftovers!

Class members had the opportunity to work with a variety of materials and cookware, including cast iron, porcelain, stainless, and copper, thereby learning from experience which material was best suited for a specific mode of cooking. They were also acquainted with catalogs for gourmet cookery items and instructed on how to interpret recipes and understand cookbook phraseology.

French cooking and lavish desserts were among the pet passions of the up-and-coming chefs. "They were very serious and diligent about making French bread, cherries jubilee, and a chocolate mousse, the success of which greatly surprised them," Mrs. Sokal said.

The Tudor Interlude.

A simple dessert with a gourmet appearance is "Pears in Red Wine" which falls into the same general category as most of the "Bachelor Cooking" concoctions. It is not made from a standard cookbook recipe.

Pears in Red Wine

(Also a delicious complement for roasted meat)

1	No. 2½ can pear halves
2½	cups burgundy wine or enough to cover pears
½	cup red currant jelly
¼	cup sugar
2	cinnamon sticks

Drain pears and place in a deep bowl. Heat wine to a simmer. Add jelly and sugar stirring over medium heat until jelly melts and sugar dissolves. Add cinnamon sticks and pour mixture over pears. When cool, cover bowl and refrigerate. The pears should stand a minimum of six hours. (Overnight is better.) If a more tart taste is desired, omit sugar. Serves four to six.

Although the enjoying of fancy cookery was usually uppermost in their minds, the students didn't forget altogether that they were basically scientists. They were very inquisitive as to why some recipes worked and some didn't. Also they were genuinely interested in learning what preservatives are and what effect they have on the taste of food and the end result of a recipe.

Anyway, from all reports, "Bachelor Cooking" was one course the participants wouldn't have missed for anything. You might say they ate it up.

Winter Mountaineering Expedition

"Difficulties made the trip," said Dr. Philip E. Stevenson upon his return from the winter mountaineering expedition. Neither gale force winds nor sub-zero temperature daunted the spirits of the two student groups which he and Dr. Robert E. Wagner led into the frigid embrace of New Hampshire's White Mountains during Intersession.

Well prepared through survival procedures discussed and practiced in the prerequisite course, "Winter Mountaineering Workshop", the near-novices followed their veteran leaders into two different mountain ranges. Dr. Wagner's 12-man group climbed the Wildcat Range, survived near-ninety-mile-per-hour winds, stayed the night, and descended the next day.

Dr. Stevenson's 7-man, 2-girl group made a three-day, two-night expedition into the Twin and Bond Range. Although they stuck to well-marked trails, the juggling of 50-pound back packs and the maneuvering of unaccustomed showshoes posed somewhat of a problem in the ascent of the 4,000 ft. North Twin. Finally the climbers conquered not only North Twin but also South Twin and the windswept Mt. Guyot their first day out. That night they slept in a National Forest shelter which consisted of 3½ sides, a roof, and a large, open doorway. "Dinner" was a back-pack meal cooked on portable gasoline stoves and "drinking water" was melted snow.

The following morning (temperature, −13 degrees; winds, 50 m.p.h. in the open; that's a wind-chill factor of 75 degrees below zero!) Dr. Stevenson led a hardy band of four, including one girl, to the summits of Mt. Bond, the almost inaccessible West Bond, and Zealand Mountain. The rest of the students spent a day of rest and relaxation back at the lean-to where the returning climbers joined them for their second night out.

Outfitting for the White Mountains.

The morning of the third day the high winds finally spent themselves and the mercury rose to an inviting 8 degrees *above* zero. At 5:15 a.m., without any prodding, everyone rose, fixed breakfast, and broke camp. By 7:30 a.m. they were ready to tackle the downward trail.

On their way down one of the girls developed a knee problem that prevented her from completing the full descent by herself. Her companions placed her on a poncho and pulled her over the snow to a point where their path intersected a snowmobile trail. She felt that the long hike ahead was still too much for her, so Dr. Stevenson had the crew set up camp for her. While the rest of the crew went out for help, one of the other students stayed with her to look after her overnight needs.

In the morning when the Forest Service snowmobiles became available, rescue squads worked their way over the shallow snow cover toward the pair who had stayed behind on the trail. By the time both the snowmobiles and hikers reached them they discovered that they had already broken camp and were all set to leave for the trip back to civilization.

At last the "rescue" was completed and everybody was together again. They loaded their vehicles (including the Propane Gasser borrowed from WPI) and headed for Worcester. The homeward trip was highlighted by a dinner stop at the home of Garrett T. Cavanaugh, '75, in Littleton, Mass. (The previous night they had stayed at the home of Outward Bound instructor David E. Bull, '74, in Littleton, N.H.) There was lots of WPI hospitality along the way.

And the way for the young adventurers had not always been easy. There were cases of frostbite (minor), sore muscles, and bone weariness. But there was reward in hardship. In their most trying moments they never failed to help one another. There was a warmth of spirit kindled on those bleak, forbidding mountainsides that no icy wind could penetrate. And that spirit cemented friendships and made each one of the group do things he never would have believed possible only a few short days before. Still sore, still tired, they even began to talk about "next time". They had conquered adversity and were willing to face up to it again. The near-novices were now experienced winter mountaineers.

"Difficulties *made* the trip," said Dr. Stevenson. He should know. He was there.

Celestial Navigation

While the televising of a reenactment of a noon sunsight determining the latitude and longitude of Harrington Auditorium may have been one of the brightest moments for students taking "Celestial Navigation," the assistant professor of physics who taught the course received a reward of another kind.

Prof. George Riley, Ph.D. '70, observed, midway through the three-day session, "the students (none of whom had ever operated a sextant at the beginning of the course) . . . advanced to a stage of competence which amazed me. . . It was a very gratifying experience to see them work as diligently as they did."

At the conclusion of his first Intersession experience, Prof. Riley was moved to write: "I would like to convey the enthusiasm exhibited by the students taking this course. I have never seen a group of students work as hard in all of the fourteen years that I have been teaching. In the final survey the students were asked if credit was a determining factor in their choice of the course and with one exception all said that it was not. Only half of the class took the course for credit and it was my observation that everyone in the class worked equally hard."

One student commented that he would need the knowledge when he crosses the Atlantic in 1975-76!

Crisis

"I would like to say now that I enjoyed this course better than any I have ever taken here at Tech or any place else. It should definitely try to be incorporated into any foreign policy course that is taught to lend a real insight into inter-nation actions and the under-the-counter operations also. As an Intersession course I would like to see it offered all three weeks. It is the type of course advertised in the catalog to all the unsuspecting incoming students hearing about the Plan, but the only one I've seen yet that fulfilled that idea."

This frank appraisal given by a thoughtful participant sums up the opinion of almost every student who played the Inter-Nation Simulation Game in Dr. John F. Zeugner's stimulating course, "Crisis."

The game involved the creation of five countries, each with five student officers of state. Each country occupied a separate room on the top floor of Salisbury where a series of ninety-minute simulations were held. The simulations corresponded to one year of diplomatic maneuvering in the "real" world. The maneuvering was restricted by each nation's Main Decision Form which served as a statement of its national posture at the beginning and end of each

Child Development—The Making of a Scientist.

simulation period. Utilizing thirteen equations, student leaders were able to trade and ally with or make war upon one another.

At first the game was quite complicated, and the initial simulation, even though war for the time being had been ruled out, was rather chaotic. However, as the students and the director got their bearings, the possibilities of the game opened up and enthusiasm ran high.

In addition to the five countries a world newspaper "The Daily Planet" was established. The paper became the natural method of communication conveying both fact and fiction among the nations.

The game required certain clarifying rules, even though the instruction pamphlet ran forty pages long. Also, a number of students proposed the following changes:

1. Increasing the cost of production or purchase of nuclear weapons.
2. Integrating guerrilla warfare into the game.
3. Allowing the Domestic Opposition Leader of a country the option of developing guerrilla revolt.

Perhaps the game's most interesting aspect is that it drags to an uncoverable surface the nature of much international negotiation. As one student put it: "I think that as a whole the participants' interest in foreign policy was stimulated, but stimulating young minds by showing them a way to participate in international fraud, deceit, and murder is promoting a value system which is contrary to the survival of man and the Earth."

The work of J. R. R. Tolkien.

Building and Maintaining a Home

The mysteries of do-it-yourself carpentry, plumbing, and wiring were unveiled in this immediately oversubscribed course. Under the capable supervision of Dr. Raymond R. Hagglund, '56, Dr. James S. Demetry, '58, and Jeffrey A. Petry, '72, students were allowed to build wall sections (including door frames and windows) and install plumbing, wiring, and insulation in the house frames they had built.

Some of the 30 young people participating learned a few lessons from the school of hard knocks. Nothing serious. Just one banged thumb, one sliver, and one slightly burned index finger. Perhaps, for them, experience was the best teacher!

Nuclear Activation Analysis

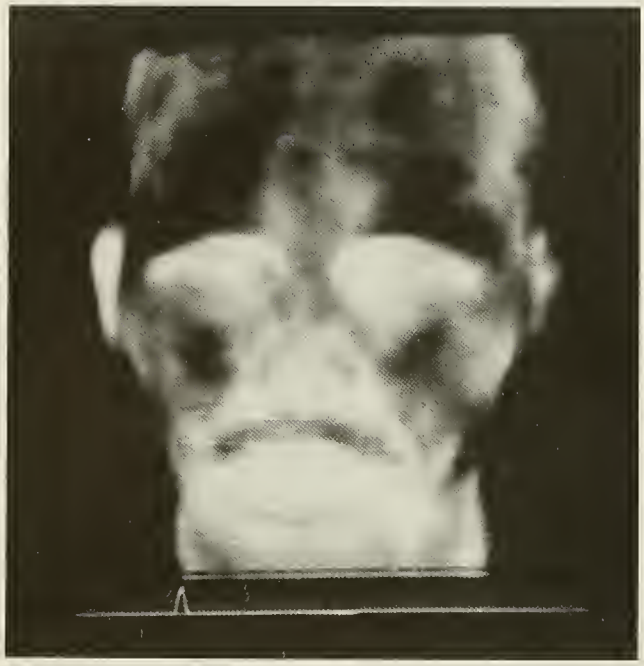
By irradiating a sample in a nuclear reactor or accelerator, it is then possible to measure the energy of gamma rays given off by the newly radioactive substance and identify constituent chemical elements. Under the coordination of Prof. Ben Wooten, six students used the technique for individual projects.

One student, testing American gold coins, discovered that the metallurgy changed at the U.S. Mint between 1853 and 1926. Another, testing the Worcester tap water, reduced four gallons down to 50 cc and irradiated the sample for an hour. It became radioactive enough to send the survey meter off-scale, indicating the presence of significant amounts of material that wasn't hydrogen, carbon, or oxygen. So far the student has identified sodium and chlorine (surprise!), and tentatively also bromine, manganese, and zinc. Because of the progress he made during the three day period, he is continuing with the project.

Biomedical Instrumentation with Computer Applications

Prof. Robert Peura, '64, had ten of twenty-seven students signed up for credit for his course which would illustrate basic

Thermograph of Biomedical Engineering Prof. Robert Peura.



instrumentation techniques and principles and demonstrate their application to practical problems in biology and medicine. However, when Prof. Peura explained what would be necessary for credit (an instrumentation project, or a review of five papers dealing with the subject), all ten students promptly changed their minds and dropped the credit option!

WPI Archives and Historical Equipment

One of the most notable things to emerge from History Prof. Michael Sokal's group were the freshman, sophomore, and junior laboratory reports of Robert H. Goddard. Although these do not represent original research, these manuscripts do have significant antiquarian value, having been written in Goddard's hand. They were given to WPI some time ago by Mrs. Goddard, but in the process of moving the library from Alden Memorial Hall to the George C. Gordon Library the reports disappeared from view.

Much of the course's effort was devoted to examining some of the older equipment and instruments of the physics department. Prof. Sokal commented that "the students found the course very interesting. I had originally planned to concentrate on the Archives, but the students were more interested in the instruments than in documentation. All in all, I think that they were given a pretty good feel for historical and archival work."

Skiing for Beginners

Fearless publications editor Russell Kay didn't have a thing to worry about his premiere day on the slopes. At 10 a.m. he buckled on the three-foot training skis (you know, the kind that are safe enough for kids) and prepared to attack Mt. Wachusett. But Mt. Wachusett fought back.

At 11 a.m. Russ's feet kept going while the rest of him didn't. Result? Tendonitis and a shoulder that didn't want to move.

"You're a first," the instructor informed him. "Nobody has ever been injured up here on three-foot skis before."

Wounded, Russ removed his "kid-safe" skis, shrugged his shoulder (the unstrained one) and walked away. Mt. Wachusett had been victorious this day. "But I'll get back at you," he glowered at the hulking mass.

Mother Nature, however, stepped in to prevent such a reencounter. There has only been one serious snowstorm sinee the fearless editor's downfall and at that time he was too busy editing this issue to ski. Some people have all the luck. . .

Oceanographic Research Cruise, aboard the R. V. Knorr in Caribbean waters.

Something Ventured

Gratifying experiences with Intersession were echoed again and again among professors who taught other courses, and especially among the students, many of whom remarked, "I never got so much out of a course in my life", or "For the first time I felt I really *knew* my professor."

The seers who designed Intersession to be an integral part of the WPI Plan and the Intersession Committee itself have seen the first test of their "gamble" pay off handsomely. They worked long and hard for its success.

Courses offered at Intersession were culled by the Committee from some 600 ideas suggested by students, faculty, and alumni. A number of courses were consolidated into one from two, three, four or more suggestions. Some courses were seen as nonviable or too expensive by the Committee. The culling continued until the goal of 150 courses was reached. Every course was given by a faculty member who suggested participation in the course himself.

Eliminating and consolidating suggested courses took all last year. The actual scheduling was done over the summer with the usual last-minute rush ensuing.

The final list of courses offered was wide and varied. Students with musical interests could enjoy everything from the fabricated strains of electronic music to the stirring renditions of the prestigious St. Louis Quartet. Geology enthusiasts with a yen for travel had it made. They were offered a geology field trip to Puerto Rico. An impressive battery of engineering and scientific courses was available, i.e., "Minicomputers," "Photoelasticity," "Cam Design," and dozens more.

Students had the option to take courses for credit or not. Although quite a few did take the credit option, a good many didn't. Some said that they enjoyed learning so much without pressure that they decided to opt for non-credit.

Some courses were so popular that a lottery system had to be devised to determine who was enrolled. "Building and Maintaining a Home," "BASIC Programming," "Drawing from the Nude," and "Child Development" were sell-outs immediately. Others with open enrollment attracted very large numbers. "Financing and Managing a Small Business" led the list with 193 enrolled, while "You and Your Money" drew 110 and "Observational Astronomy" followed closely with 106 in attendance.

All in all, 1400 undergraduates, 75 graduate students and 172 non-WPI students took Intersession courses. This latter number included about 60 Alumni and 20 Consortium students.

Something Gained

Dean William Grogan had this to say about Intersession: "Intersession '72 demonstrated beyond anything that has ever preceded it that WPI is a college with untapped potential and interests. Out of Intersession came new intellectual associations between faculty and students, faculty and other faculty, and within the student body. The fact was established that when properly challenged and motivated the WPI student will eagerly respond without compulsion.

"Our faculty, with over 95 percent participation, came through with imagination and professional zeal to establish the most exciting learning atmosphere I have ever seen at WPI.

"I only wish more alumni had been able to join us during this period. We shall work harder next year to make more widely known the opportunities for alumni during Intersession."

The course books are closed. The field trips have stopped. The speakers have left. Intersession 1972 has come and gone. But the enthusiasm and intellectual excitement that it engendered still remain. Neither January nor any other month at WPI will ever be the same again.

After the Fact

an evaluation by Dean of Undergraduate Programs William R. Grogan

IT'S VERY HARD to compare Intersession with past programs and experiences, because there's never been anything at all like it here. Two major things emerged. One was the feeling of accomplishment by many of the faculty and students in a new program and the excitement of participating in a totally different educational environment. The other was the relationship between faculty and students.

I have been on the faculty almost twenty-five years, and I have never seen such real communication, such cordiality between students and faculty. I think the faculty during these Intersession weeks tended to look on the students very much as individuals. And the students got to know faculty members as people with real and exciting interests, not just as teaching machines that lecture at them. We also had combinations of faculty working together, getting to know each other on a daily basis, which just doesn't happen otherwise.

I think that Intersession established in the minds of our students — better than any lecture, any paper, any formal presentation could have done — that one of our educational objectives is to help develop in our students a breadth of personality and life interests. This isn't normally possible; we tend to cast the faculty member in the role of professional specialist, and I think we sometimes leave students with the impression that that's all that the faculty do. Students naturally build models for themselves and their behavior and expectations from individual faculty members, more or less subconsciously, and I think that sometimes they tend to limit their horizons unnecessarily. What Intersession did better than anything we've ever done before is to show the extremely wide range of interests that the faculty possess. We had electrical engineering professor Harit Majmudar teaching Indian music; physics professor Thomas Keil showing how to build a harpsichord from a kit; and chemistry professor Herbert Beall introducing a group of students to the art of playing the recorder (the flute, not the tape machine!). In the long run, this will have a profound effect on many students.

(One of the very fine things we found was that merely by offering a particular Intersession course we created a new social or interest group. For example, we now have a full-fledged outing club at WPI, and this happened just because Profs. Philip Stevenson and Bob Wagner are interested in hiking and climbing and offered to share that interest by means of the Winter Mountaineering course. Similarly, the recorder group that met for Intersession has decided to continue as an organized activity.)

Many faculty members became involved in Intersession because it gave them the chance to do something they *wanted* to do, in many cases something they had wanted to do for a long time. We had more than 300 people from off-campus participating in Intersession, as students and guest faculty, and the infusion of new ideas and thinking had a very stimulating effect on everyone. Intersession was, I think, one of the best things we have ever done in terms of really bringing together community members and outsiders in an interesting, educational and social atmosphere. The results are quite intangible and difficult to measure. The learning that took place was very concrete in many instances, but in others it was quite different. Only time will tell the long-term benefits of this period.

Reaction to Intersession has been incredibly enthusiastic. The only really negative comments I've heard are from faculty and students who didn't much participate in the program. In answer to a general questionnaire, over 97 percent of students want Intersession repeated; and some 98 percent recommended that the particular course they took be rerun. Ninety-two percent felt that their time was well-spent. The breakdown of courses was rather interesting; only one-third took courses related to their major, and another one-eighth related to their minor. The great bulk of students — 54 percent — took courses merely because they were interested in the subject. Surprisingly, the availability of credit was a factor in the choice of courses for only one out of four students.

We have learned a lot from Intersession this year. We have learned that it should be done with a team-teaching approach. If only one or two people taught an Intersession course, they found it an extremely exhausting experience. For many students and faculty the evening sessions were too much. If the afternoon was used for field trips or study or some form of hands-on experience, then the evening sessions worked well. If there were all-day-long lectures, though, evenings were quite difficult. We learned a lot about how to handle an all-day program.

I think, too, that we should involve more students, particularly upperclassmen, as instructors.

All in all, though, Intersession was a great success. I think that it has demonstrated quite significantly that at WPI we can really communicate and live the excitement of learning. That's a lot of what the WPI Plan is all about. And, when you come down to the very basics, that's what education is. It's not learning facts or procedures. It's learning how to learn — and enjoy it.

INTERSESSION
AN ALUMNUS' VIEW

WPI's first Intersession certainly was tremendously successful, a fine testament to careful and thorough planning and execution. But from an alumnus' viewpoint, we can infer a great deal more.

We hear much of the need for innovative challenges for youthful minds, for evolutionary educational techniques geared to evolutionary technology. But some of us may sometimes harbor doubts. We may speculate that perhaps we encourage too much challenge, too much evolution. Intersession, therefore, may have provided us with another measure of educational change.

Three out of every four students enrolled at WPI signed up for one or more Intersession courses. Students thereby committed themselves to spending one, two, or three weeks voluntarily attending classes – generally not for credit. And in so doing they sacrificed part of their between-semesters vacation. The personal commitments by some 1500 students clearly attest to their enthusiasm for the program.

Some of us may have questioned the need for so many courses to be offered. Yet enrollment was so high that one hundred forty-six courses were presented. And many students were frustrated when course after course was booked to capacity. The course on building and repairing the home, for example, with an enrollment limit of 30 students, had 300 applicants. Student response again provides strong testimony to Intersession's value.

From the vantage of a month's meditation on Intersession's success, it is easy for us to applaud our college's faculty and administration for their perception and understanding. It may have been more difficult for us to have done so a month before Intersession.

What then can we, as concerned alumni, conclude from Intersession? First, we can recognize the excellence of our college's educational programs. Second, we can be thankful that those who guide the Institute's future are developing innovative changes and evolutionary educational techniques that evoke such dramatic response from the student body. And finally, we look to the future.

A college that evolved the WPI Plan, a college that developed Intersession, a college that in May will inaugurate an annual seminar program for in-depth analysis of contemporary issues is a college with firm prospects for continuing educational excellence.

We can all take pleasure in being a part of the heritage of such a college and, through our Alumni Association, in being contributors as well as beneficiaries of the future.

I. J. Donahue, Jr., President
WPI Alumni Association

"It's inspiring. He came back for his fiftieth reunion and simply decided to stay."

Drawing by Stevenson; © 1971 The New Yorker Magazine, Inc.

VARSITY REVIEW

BASKETBALL

Coach Herrion's hoopsters experienced a hard time the first half of this year's season. The WPI basketball team found the early going plagued by the lack of team cohesiveness and patience, a trait lost through graduation of last year's seniors. The Engineers managed to come through the season in fair shape, however, finishing with 8 wins and 10 losses.

Leading scorer was 6'3" captain John O'Brien, with an average of 22 points per game. He scored 30 points against Tufts on January 17, but the team could not pull out a victory, the final being 95-83. A week later, John scored 34 points against Amherst, which was decisive in the 79-73 WPI victory. For that performance, O'Brien earned a spot on the ECAC All-Star Squad of the week.

Another important player was center Jim Henderson, leading the team with an average of 14 rebounds a game. He sprained his ankle early in the season, against Wesleyan, but returned to peak performance to spark the Engineers.

The worst game of the season was against Assumption. A rout was expected, although by halftime WPI was only 9 points behind, thanks to poor shooting by the opposition. The smell of possible victory didn't last long, however, for Assumption rallied and finished with a 50 — count 'em — 50 point lead over the hapless Engineers, 122-72.

Down but not out, the WPI hoopmen came back to finish the season with a pair of wins against Clark and Brandeis.

WRESTLING

The WPI wrestling team is not experiencing one of its better years. So far, the grapplers have a 2-5 record with wins over Hartford and Tufts. First year coach Dick Heikkinen has had to work with a young and inexperienced squad who have come up with some fine individual performances. Vin Colonero and John Wyman have to be given a lot of credit for their efforts this year. Vin has been wrestling heavyweight and John 118 for Tech this year without any previous varsity experience and giving a fine account for themselves. Along with Vin and John, Larry Martiniano has been the individual leader of the matmen with 5 pins and 5 victories in 7 decisions.

SWIMMING

Tech's swimmers have still not launched themselves into the heart of their season. Having competed in only four meets, they possess a .500 mark at the present. The team was surprised by Babson after defeating Holy Cross in its first encounter. After losing to perennially strong Coast Guard, the mermen beat Keene State.

The team, as a whole, is proving to be a potentially fine unit as proved by its recent first place in the 800-yard Breast Stroke Relay at the Coast Guard Relays. Coach Peterson looks to the rest of the season with guarded optimism in hopes of producing a winning slate.

BASEBALL

It appears that Coach Charlie McNulty and his 1972 edition of WPI's baseball team will have a difficult time equaling last season's 11-win 3-loss record.

One of the most important reasons for this pessimistic attitude is the loss of hurler Bill Beloff (7-0) through graduation. Returning moundsmen are co-captain James Keefe, Daniel Eide and newcomer from the frosh nine, James Fountain. These three men will form the nucleus of the pitching corps.

With the return of co-captain Steve Buba at first base and catcher William Cormier along with dependable shortstop James Buell, the infield is expected to equal or surpass last year's inner defense.

There are two big holes in the outfield due to the departure of Robert Johnson (co-captain) and College Division All Star centerfielder Dave Sund. Wayne Pitts, who took over the rightfield job during the season, is the only seasoned outfielder returning.

The schedule remains about the same. The only thing left is cooperation from the weather man.

TRACK AND FIELD

Starting his 18th year as track coach, Merl Norcross believes his 1972 edition will be relatively strong and competitive.

Balance, lacking in 1971, will be a key to the track team's success. Depth will improve in every event especially the jumps which were weak last year.

A number of top-notch performers will return, including Mark Dupius, school record holder in the shot and discus, and James Weber, record holder in the intermediates. The 440 yd. relay team is still intact with Tom Fieldsend, James Weber, Richard Zepp and Tom Beckman.

Upperclassmen being counted on in their specific events are Andy Murch (mile), Tom Beckman (100-220), Greg Dunn (high jump) and Robert Urban (pole vault).

Freshmen will be counted on heavily in many events especially the jumps and hurdles. Some frosh who show promise are: Dave Fowler (T.M.), Jeff Wnek (mile), Chris Keenan (880), Kurt Lutgens (440), Dan Grover (high hurdles and long jump).

Some opponents seem unbeatable, but the team should be tough to beat.

TENNIS

Captain elect Andy White, '73, is the only returnee from last year's squad. From last year's JV team, Gene Franke and Tom Burns should be leading candidates for a place on the team, but the freshman class will have to produce some "hidden talent" if the team is to be successful this year.

COMPLETED CAREERS

NORRIS D. PEASE, '13

Norris D. Pease passed away on December 22, 1971, at the Nyack (New York) Hospital.

Mr. Pease was born in Plainville, Conn., on August 10, 1890. He attended Southington High School and entered WPI in 1909. In 1913 he received his degree in civil engineering.

After working briefly for the Connecticut Highway Department and on the first subway tunnel under the East River in New York City, he joined the Long Lines Department of the American Telephone & Telegraph Company, serving the company for forty years in Philadelphia, Cleveland, Columbus and New York. At retirement in 1955 he held the post of Division Traffic Engineer in New York.

Shortly after retirement, Mr. Pease participated in the International Geophysical Year as communications consultant with the Astrophysical Laboratory of the Smithsonian Institution in Cambridge, Mass. He then spent over five years with the Traffic Department of the Alaska Communications System in Seattle and traveled extensively in Alaska. Later he did consulting work with I.T.&T., Communications Services, Inc. and Universal Telephone, Inc. in New Jersey, Virginia, and Seattle.

Always a strong supporter of WPI, Mr. Pease was also active in the Alumni Association and was president of the Philadelphia Chapter and a Council representative in 1926-27. While in college he was a member of Alpha Tau Omega and Skull.

He was a senior member of the Institute of Electrical and Electronics Engineers and belonged to the Armed Forces Communications Association. He was a senior master in the American Contract Bridge League. During World War I he served as a Sergeant with the Corps of Engineers with the A. E. F. in France.

He is survived by a son, FRANK W. PEASE, '50, of Woodcliff Lake, New Jersey.

RODERICK C. HALL, '14

Roderick C. Hall, 78, an industrial chemical salesman for the former Brewer Chemical Co. for 25 years, died January 4, 1972 in Holden, Massachusetts.

He was born in Worcester, graduated from South High School and attended WPI. An army veteran of World War I, he was later with the Standard Oil Co. in China. At one time he was associated with Chemical Sales and Service Co., Inc.

A resident of West Boylston, Mass., he was a member of the American Legion, Greendale Retired Men's Club, treasurer of the National Gardening Club and a member of the Worcester County Bee Association. He also belonged to Hope Congregational Church.

Among his survivors are his widow: Mrs. Marion Jensen Hall; two sons, Roderick C. Hall, Jr. of Mansfield Center, Conn., and Richard J. Hall of Grosse Pointe, Mich.; a daughter, Anne, widow of Dr. Wilson F. Powell of Guilford, Conn.; a brother, the Rev. Winthrop G. Hall of Worcester; two sisters, Mrs. Marjorie Stauffer of Hightstown, N.J.; and Mrs. Elizabeth Heinsohn of Wichita, Kan.; nine grandchildren and one great-grandson.

LESTER H. ELKINS, '16

Lester H. Elkins died on September 19, 1971 in Takoma Park, Md.

Born December 5, 1894 in Westbrook, Maine, he was educated in Westbrook schools. He graduated from WPI in 1916 with a degree in electrical engineering.

Before retiring in 1965 he was an engineer in electrical design at the Portsmouth (N.H.) Naval Shipyard where he was employed for fifteen years.

Among his survivors are his widow, Mrs. Lester H. Elkins.

RAYMOND M. HICKS, '17

A retired patent counsel for the Naval Ordnance Laboratory in White Oak, Md., Raymond M. Hicks died November 17, 1971 in Silver Spring, Md., at the age of 78.

Born in East Haddam, Connecticut on June 10, 1893, he studied at Suffield (Conn.) Academy, WPI and later earned a degree in Patent Law from New York University.

Mr. Hicks, a member of Phi Sigma Kappa, was president of the D.C. Chapter of the Society of American Magicians, International Brotherhood of Magicians.

He is survived by his wife, the former Catherine Bailey; a son, David, of Cranford, N.J.; and two grandchildren.

LEVI E. WHEELER, '17

Levi E. Wheeler of Shrewsbury, Massachusetts, passed away in December of 1971. He was 77 years old.

He was born in Bolton, Mass., on January 28, 1894, attended Clinton (Mass.) High School, and graduated from WPI in 1917 as a mechanical engineer. For a number of years he was with The Heald Machine Co., Worcester, Mass. He retired in 1961.

A member of Tau Beta Pi, he also was a Mason, belonging to the Blue Lodge Chapter, Council and Commandery.

RICHARD M. SEAGRAVE, '21

Richard M. Seagrave died of a heart attack on January 11, 1970 in Mesa, Arizona. He was 71.

Born in Pittsfield, Mass., on April 21, 1898 he attended high school in Dalton, Mass., and later studied at WPI.

Retiring in 1961, he was with the Pittsfield branch of the General Electric Company for nearly 40 years. He was a member of Phi Sigma Kappa.

CARL R. CRON, '23

Carl R. Cron, who was with the Morgan Construction Co., Worcester, Mass., for over 45 years, died on January 10, 1972 at the age of 70 years.

A Worcester native, he attended Classical High School and WPI. During his long service with the Morgan Company

he worked as an electrician and maintenance superintendent.

He was a member of Morning Star A.F.M. Lodge in Worcester.

LLOYD E. MAGOON, '28

Lloyd E. Magoon, 66, passed away December 12, 1971, in Manchester, Connecticut.

A native of Worcester, Mass., he was educated at South High School and graduated with a degree in electrical engineering from WPI in 1928. Before he retired two years ago, he had been employed for twenty years as a supervisor in the assembly division of Pratt and Whitney, Division of United Aircraft Corp., East Hartford, Conn.

His survivors include his widow, Mrs. Eva Bean Magoon and a daughter, Miss Helen Magoon, both of Manchester, Conn.

FRANK W. LEE, '39

Frank W. Lee of North Andover, Mass., passed away in May of 1971.

He was born on April 30, 1916 in Lawrence, Mass., where he attended high school. Later he enrolled at WPI.

During his lifetime he was a control engineer for Station WLAW, Lawrence; manager of the Lawrence Plate Glass Co.; and was associated with the Eastern Garage Door, also a Lawrence firm.

He is survived by his widow, Mrs. Pauline Howe Lee, and two children.

FRANK A. CROSBY, JR., '40

Frank A. Crosby, Jr., who was closely associated with the introduction and production of the jet engine, died December 17, 1971 in Hartford, Connecticut. He was 52 years old.

He was born in Springfield, Massachusetts, on October 12, 1918 and graduated from WPI with a degree in mechanical engineering in 1940. After graduation he taught mechanical engineering at WPI for a year and then began his lifetime career as a project engineer for Pratt and Whitney Aircraft, Division of the United Aircraft Corp., East Hartford, Conn.

Mr. Crosby, who lived in South Glastonbury, Conn., was a member of Tau Beta Phi and Alpha Tau Omega.

Among his survivors are his widow, Mrs. Constance McKerrow Crosby; his mother, Mrs. Marion L. Crosby of Springfield, Mass.; two daughters, Miss Carolyn M. Crosby and Miss Pamela E. Crosby, South Glastonbury, Conn.; a brother, Robert, of Stamford, Conn.; and a sister, Mrs. Ernest A. Phillips, Jr., of Winchester, Mass.

LEONARD T. JANOWSKI, '52

Leonard T. Janowski died on August 23, 1971 in Clinton, Massachusetts.

Mr. Janowski was born February 29, 1924 at Shrewsbury, Mass. and attended Auburn High School. In 1952 he received a degree in electrical engineering from WPI.

Following graduation he accepted an engineering position with The Heald Machine Co. in Worcester. Later he joined the General Electric Company (Small Steam Turbine Department) in Fitchburg, Mass., where in 1967 he was appointed manager of quality control of the Mechanical Drive Department.

Mr. Janowski was a registered professional engineer and a member of Sigma Alpha Epsilon and Eta Kappa Nu. He was also on the Town of Lancaster (Mass.) Industrial Development Commission.

J. PARK GILBERT, '55

J. Park Gilbert, 38, general insurance agent with Gilbert and Weston Inc., Claremont, N.H., died January 15, 1972 in Hanover, N.H., after a brief illness.

He was vice president of Gilbert Realty Co. and corporation secretary of Gilbert and Weston, Inc. He was also a member of the N.H. Association of Independent Insurance Agents and of the National Association. A Claremont native (born December 22, 1933), he was a past trustee of the First Congregational Church of Claremont, and the director of the Claremont Chamber of Commerce.

Following graduation from Stevens High School, Mr. Gilbert enrolled at WPI and graduated in 1955 as an electrical engineer. For a time he was associated with the Factory Insurance Association and Creth & Sullivan Inc. of Philadelphia. Later he worked for Mackintosh Inc., Claremont.

He was a member of Phi Sigma Kappa, the Masons, and BPOE. As a graduate of the American Institute for Property and Liability Underwriters, Inc., he received the designation of charter property casualty underwriter. He served with the U.S. Army from 1956 to 1958.

Among his survivors are his wife, Mrs. Frances H. Gilbert of Claremont; a son, Jeffrey K. and daughter Sandi L., both of Claremont; his parents, Mr. and Mrs. D. Kearns Gilbert; and a sister, Mrs. Leonard Rivenbury of Powell, Ohio.

YOUR CLASS AND OTHERS

1906

L. NORMAN REEVE will be spending the summer months in Falmouth, Mass.

1907

JAMES B. LOWELL, now retired as the owner of J. B. Lowell, Co., Builders, is living in Worcester, Mass. He is a member of the American Society of Civil Engineers and the Boston Society of Civil Engineers.

1909

ROGER B. HUBBELL currently resides in Rockville, Md. He is a former resident of Medway, Mass.

1915

Now retired as a self-employed consultant, JOHN W. GLEASON makes his home in Leesburg, Florida.

1916

Clearwater, Fla., is the current address of HUBERT H. FRARY . . . JOSEPH E. MURPHY calls Warwick, R.I., home.

1918

Married: BENJAMIN LUTHER to Cressie R. Merriam on June 24, 1971.

Formerly with the Worthington Corp. of Harrison, N.J., CHARLES L. WADDELL, now retired, lives in Fort Lauderdale, Florida.

1920

Also retired and living in Florida is HERBERT H. UPTON of Lake Wales.

1921

EARL B. PICKERING has moved from New Ipswich, N.H., to Palm Beach, Fla.

1925

DANIEL L. HUSSEY was recently installed as president of the Old Guard in Short Hills, N.J. Mr. Hussey, whose business career totaled 40 years of service with various divisions of the Standard Oil Company throughout the world, is presently a member of the Cultural and Heritage Committee, a worker for New Eyes for the Needy and the Red Cross. He is past-chairman of the Delaware-New Jersey Red Cross Conference. For several years he also has been active in the New Jersey Partners of the Alliance Committee. This committee has a partnership with a similar committee in Alagoas, Brazil. These involve self-help programs in the hospitals and in educational fields. Mr. Hussey is executive vice-president of the group.

1926

CHARLES M. MORAN, chairman of the Union Hospital (Fall River, Mass.) corporation, was honored for his quarter-century of imaginative planning in December when two modern structures, a new wing and power plant, which were built under his leadership, were dedicated in ceremonies at the hospital. In the dedicatory issue of the Union Hospital Log the tribute to him reads: "His engineering skill and knowledge, his profound knowledge of hospital needs and operation, his foresight and cooperation with the medical staff and administration, have been of inestimable value to the Union Hospital and

the people it serves." Also in his honor the new wing of the hospital has been named The Charles M. Moran Building.

1927

BURTON E. KELLEY is president of CBF Systems, Inc., Covina, California.

RUSSELL G. WHITTEMORE, director of product development for the automotive group of Pittsburgh Plate Glass Industries' Glass Division, retired in December after 43 years with the company.

A national authority on automotive and aviation glass products, Mr. Whittemore devoted his career to product development at PPG's research laboratories, manufacturing facilities and corporate headquarters.

He joined PPG in 1928 and participated in the development of laminated safety glass, the forerunner of present automotive windshields and other laminated glass products used throughout the world. Subsequently he served in various technical and supervisory positions at PPG's Creighton, Pa., safety glass fabrication operations.

During World War II Mr. Whittemore served as the Glass Division's West Coast technical representative, dealing primarily with the glass needs of the aircraft industry. He went to the Pittsburgh headquarters in the same capacity in 1946 and five years later was named director of product development for the division. He was appointed director of product development for automotive glass in 1962, with primary responsibility for the technical aspects of automotive glass usage and safety.

1929

RICHARD L. VERVILLE, having recently retired as division superintendent for the New England Electric System, Massachusetts Electric Company Division, North Andover, Mass., now makes his home in Bethel, Maine.

1931

EDWARD J. BAYON has been named president of Tighe & Bond, Inc., Holyoke, Mass. Mr. Bayon, one of three owners of the firm, was formerly executive vice-president. Prior to joining the corporation fifteen years ago, he was General Superintendent of Public Works in Holyoke. He is a registered professional engineer and land surveyor. The company which he now heads operates a sanitary engineering laboratory, and most recently has been very active in assisting industries with applications to the U. S. Corps of Engineers for 1899 Refuse Act Permits. It has also been active in the development of water supply systems and water pollution control facilities for many of the Western Massachusetts cities and towns . . . TRUEMAN L. SANDERSON has retired and is wintering in Deltona, Florida.

1933

Officials of Sikorsky Aircraft Division of United Aircraft Corporation, Stratford, Conn., have announced the promotion of HARRY T. JENSEN from engineering manager to division vice-president—engineering. The new vice-president will be responsible for executive control and direction of all engineering activities. He joined Sikorsky in 1941 as a radio and electrical designer. He has held the positions of chief test engineer, chief of design and test engineering and holds patents on aircraft design and test methods. He was elected a Fellow in the Royal Aeronautical Society and an Associate Fellow in the American Institute of Aeronautics.

1935

SAMUEL D. EHRLICH writes that he is the vice-president of manufacturing for Engineering Design Associates, Reston, Va. . . . Having retired as vice-president and general manager of Remco Products Corp., York, Pa., J. CLIFFORD MARTINKA now resides in Marathon, Florida during the winter months. Hamilton, Montana is his summer address . . . EDWARD TAVIDIAN serves as an electronics engineer for Redman Electronics Corp., Enfield, Conn. . . . PLUMMER WILEY recently attended a wine and food taster's meeting in Paris, France.

1936

The current address for ERNST P. KRIPPENDORF, now retired, is Mirror Lake, N.H. . . . Also retired is HAROLD C. WHITMAN who makes his home in Ormond Beach, Fla. He was formerly administration manager for Raytheon Co., Counter Measures Dept., Wayland, Mass.

1937

W. ROBERT POWERS played a prominent role in the TV presentation "Firetrap" which was aired last December. He is superintendent of the Fire Prevention Bureau and public relations for the City of New York and secretary to the New York Board of Underwriters. He is also author of a book on fire prevention which has been translated into Japanese. One of his three sons, John D. Powers, is a senior at WPI . . . "The country is fantastically beautiful; the climate outstanding; and the people are just out of this world," writes FRANK ROLLINS glowingly from his new home in Richmond, Nelson, New Zealand. Frank works part time as a college instructor but is also looking forward to purchasing a 500-acre farm.

1938

Johns-Manville Corp., Denver, Colorado, employs EDMUND M. FENNER, Director, Environmental Control. He lives in Evergreen.

1939

CHARLES H. AMIDON, JR., of Holden, Mass., has been appointed engineering director for the David Gessner Co., Worcester, Mass. He previously held the same post with Butterworth Manufacturing of Philadelphia.

1940

KENNETH R. BLAISDELL, president of Tectrol Associates, West Springfield, Mass., was the guest speaker for the January meeting of the Central Connecticut Chapter of the Society of Manufacturing Engineers in Ansonia, Conn. His topic was "Valves That Think." With the aid of demonstration units he illustrated how to save at least 50 per cent of design and installation time and 60 per cent of down time on many valve applications. He also illustrated how quick they are to install and easy to understand. In 1956 he was chairman of the Connecticut Valley Chapter of ASTME and later was membership vice chairman of the national chapter in New England. In November he received a patent on sequence valving without limit switches. He has been a consulting engineer in the fluid power field and a specialist in automation equipment for the past 18 years. He is a registered professional engineer. Mr. Blaisdell has been active in the WPI Alumni Association serving first as secretary-treasurer and then president of the Connecticut Valley Chapter. In 1965 he was a Council representative . . . Officials of the American Re-Insurance Company, New York City, recently announced that HERBERT W. SHAW, JR., has been named a senior vice-president of the firm. Mr. Shaw joined the company in 1963 as a property facultative underwriter, became assistant secretary in 1964 and vice-president in 1966. Previously he was with Springfield Fire & Marine, Hutchinson, Rivinus & Company and the Factory Insurance Association.

1943

The principal structural engineer for the Jackson & Moreland Division, U.E. & C., is GEORGE W. GOLDING, JR. The company is located in Santurce, Puerto Rico . . . FRANK McNAMARA has been named the manager of sales administration for the Caterpillar Americas Co., a Caterpiller subsidiary, in Peoria, Illinois.

1944

SHERMAN B. CAMPBELL, former manager of research and development for Advanced Digital Systems, Inc., Mohawk, N.Y., has been promoted to the post of vice-president of engineering. Prior to his joining ADS in February of 1970, he was manager of the Sterilizer Product Development Division, American Sterilizer Company, Erie, Pa. . . . At the annual meeting of the Consumers Savings Bank, Worcester, Mass., IRVING JAMES DONAHUE, JR., was elected to the board of trustees. Jim is president and treasurer of Donahue Industries, Inc., Shrewsbury, Mass. He is also president of the Central Massachusetts Employers Association, vice-chairman of the Shrewsbury Finance Committee and president of the WPI Alumni Association . . . FRED S. MOULTON, now a self-employed investment manager, resides in Denver, Colorado.

1946

Vice-President of GTE International Systems Corp., Tehran, Iran, is ROBERT H. FARWELL . . . RICHARD M. UNDERWOOD of New Canaan, Conn., has been named a vice-president of Honeywell Inc.'s computer operations with headquarters in New York City. He is responsible for the marketing of the firm's computer equipment and services throughout the northeast portion of the U.S., covering an area from New York to Ohio and from Maine to Delaware. Mr. Underwood, who joined Honeywell in 1958, had been a director of field marketing since early 1970. Before moving to New York he was regional director in Detroit, and prior to that, branch manager in Cleveland.

1946B

JOHN W. CARPENTER, JR., district sales manager for National Homes Corp., has moved his business headquarters from Grand Rapids to Walloon Lake, Michigan . . . A resident of Cohasset, Mass., A. LEWIS ROGERS, JR., is the new general sales manager at Instrumentation Laboratory, Inc., of Lexington. He is responsible for sales and service for IL's domestic, Canadian, and Mexican markets. He will also oversee both existing and newly-developing product lines. Mr. Rogers was previously associated with Quantum Computer Corp. and Honeywell, Inc., before going with IL. Instrumentation Laboratory Inc., manufacturers of scientific instruments for use in medicine and industry, maintains plants in Lexington and Watertown, Mass., Milan, Italy, and Hersel, West Germany.

1947

GEORGE W. BROUGHTON is quality control supervisor for the Laminated & Coated Products Division of the St. Regis Paper Company, Attleboro, Mass.

1948

NORMAN L. DIEGOLI of Middleboro, Mass., is one of three candidates seeking a three-year term on the Middleboro School Committee. A registered professional engineer, for 23 years he has been employed by the Massachusetts Department of Public Works. He is a member of the Middleboro Municipal Sites Acquisition Board and the Advisory Staff of the Middleboro Planning Board . . . A former selectman of New Salem, Mass., ROBERT W. HENDERSON, is currently serving as town moderator.

1949

Bostitch Division of Textron Inc. has named JOSEPH R. WINSLOW, chief plant engineer, as manager, environmental control, for plants at East Greenwich, R.I., and Clinton, Conn. Mr. Winslow joined Bostitch in the fall of 1969 after service with Kaiser Aluminum in Baltimore, Md., and Wyman-Gordon Co., North Grafton, Mass.

1950

LT. COL. FRANK W. HARDING III of Garden Grove, Calif., is currently located at the USAF Space & Missiles Systems Organization in Los Angeles. He was promoted to the rank of Colonel in November of 1971 . . . RICHARD LYON, JR., of Hubbardston, Mass., is seeking a third term as selectman in the town election. He served on the local school committee for seven years and on the Quabbin Regional School Committee for three years. He is a teacher at Quabbin Regional High School . . . It was recently announced that HAMMOND ROBERTSON, JR., has been appointed vice-president of Franconia Manufacturing Corp., Lincoln, N.H.

ROBERT F. STEWART, newly named president of the industrial products division of North American Rockwell, recently visited the Acme Chain Division in Holyoke, Mass. Following his tour he said that the Holyoke division looked good. "I'm optimistic," he said, noting it looks as if there will be a continued increase in the economic picture.

1951

CDR. CHARLES G. DARRELL, who resides in Maryland, serves the U.S. Navy at OFC, NAV Research in Arlington, Va. . . . The former president of Chemetron-Noury Corporation, GARY GEISSLER, has accepted the position of sales manager for the Hooker Chemical Corporation, Niagara Falls, N.Y. He was with Merck & Co., Rahway, N.J., from 1951 until 1963. Joining Chemetron Corporation in 1963 as manager of commercial development, he subsequently held the posts of assistant general manager and general manager of organic chemicals . . . USAF CAPT. EDWARD A. KACMARCIK, who was recently stationed at Stewart Air Force Base, Newburgh, N.Y., is presently serving at Westover Air Force Base in Massachusetts. . . . The president of Mackay Paving Co., Tryon, N.C., is STILLMAN MACKAY . . . DUNCAN W. MUNRO of Northboro, Mass., superintendent of Mount Auburn Cemetery in Cambridge, has been appointed general chairman of the 1972 Management Conference of the American Cemetery Association slated to be held April 23-27 in Martinique, French West Indies. Mr. Munro is currently a director of ACA and has served in other leadership posts. He has been superintendent at Mount Auburn since 1967. At the present time he is serving as president of the Massachusetts Cemetery Association and as a director of the New England Cemetery Association.

1952

LEO O. LUTZ serves as chief engineer for the Nashua Corp., Nashua, N.H.

1953

The vice-president of United States Radium Corporation, ROBERT C. WOODWARD, resides in Basking Ridge, N.J. His business is located in Morristown.

1954

Meckler Associates Inc., of Los Angeles, of which MILTON MECKLER is president, has entered a joint venture with The Engineers Collaborative of Chicago, Illinois. The new firm is known as The Engineers Collaborative of California, with offices in Chicago, Los Angeles, and St. Louis, Mo. Mr. Meckler, who launched his consulting engineers firm in 1970, has been an engineering consultant for twelve years. He is the inventor of a hydraulic structural system for high-rise buildings, has lectured extensively, and is the author of technical articles on a variety of subjects. He is a member of the American Society of Mechanical Engineers and holds a Certificate of Qualification issued by the National Council of State Boards of Engineering Examiners.

1956

E. I. du Pont de Nemours of Wilmington, Del., employs RICHARD J. EMERY as a manufacturing assistant . . . RONALD A. VENEZIA is chief of the office of land use planning for the Division of Control Systems at the Environmental Protection Agency, Research Triangle Park, N.C.

MORGAN CONSTRUCTION CO.

ENGINEERS & MANUFACTURERS

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1957

DONALD F. BERTH has moved from Ithaca, N.Y. to Amherst, Mass. Berth, the

former editor of the Cornell Engineering Quarterly has been named Director of Development and Public Relations at Hampshire College, where he is also secretary to the Board of Trustees. . . KURT H. FRANCE, a project engineer for CH2M-Hill, Redding, Calif., resides in Palo Cedro. The Frances have three children: daughter Kirsten and sons Eric, 11, and Roger, 9 . . . It was recently announced that ROBERT R. PURPLE has been named assistant manager of the filter division of the Sprague Electric Company, North Adams, Mass. Mr. Purple will now be responsible for the division's design, material management and production groups related to the Marshall St. plant. A Sprague Electric employee since May 1958, he has held various engineering and sales posts. Most recently he was division marketing manager.

1958

ROGER A. JOLICOEUR works as program manager for Sylvania Electronics Systems, Needham, Mass. . . . Vice-president of Electronic Marketing, Specialists, of Van Nuys, Calif. is DOUGLAS H. REED of Orange.

1959

Married: DAVID R. BRAGG to Miss Andrea Rose Nichols of North Branford, Conn., on January 8, 1972. The groom is employed by Cahn Engineers, Inc., of New Haven. The bride graduated from the New Haven Academy of Business. They are making their home in Guilford, Conn.

WILLIAM A. RABINOVITCH, '58, who is making quite a name for himself in the art world, had a one-man exhibition of large paintings at the Monterey Jazz Festival in California last September.

The focal point of the exhibit was his massive "Sky City," a 7 ft. by 12 ft. painting done in oil on acrylic on linen.

Mr. Rabinovitch has won a number of awards for his paintings and has shown his work throughout this country and in Europe. He was awarded first prize in graphics and second prize in painting at the 1970 Monterey County Fair. In 1966 he received first prize in the Naval Post Graduate School Religious Art Contest.

Alfred Frankenstein, senior art critic of the San Francisco Chronicle, awarded him first prize for work shown at his one-man show at the Monterey Peninsula Museum of Art in 1965. In 1965 he also won first prize at the Monterey Jazz Festival.

The Pacific Grove (Calif.) Art Center, the Avanti Gallery in New York City, and the Silvermine (Conn.) Competitive have accepted his paintings for exhibition and judging. In 1968 he had a one-man show in Madrid, Spain, which was sponsored jointly by the American Embassy and the "Associacion Cultural Hispano Norteamericano." He has shown in other competitions and group shows and operated an experimental Art Center on Cannery Row for several years. In 1971 he was on the film selection committee of the Monterey Film Festival.

After graduating from WPI in 1958 with a degree in mechanical engineering, Mr. Rabinovitch studied painting at the Boston Museum School of Fine Arts and the San Francisco Art Institute. Currently his work may be seen in the Rental Gallery of the Monterey Peninsula Museum of Art, the Gilbert Gallery in San Francisco, and at his studio at 638 Lottie Street in Monterey.

1960

ROBERT J. KANDALL holds the position of sales representative with M. W. Kellogg Co. of Schiller Park, Illinois . . . Bendix Abrasives, Jackson, Mi., employs RICHARD S. MEYER, senior engineer . . . JOHN S. O'CONNELL, JR., who has been studying as a graduate student at the University of California at Berkeley, has moved from San Jose to Oakland . . . BERNARD L. TETREAULT is Executive Director of the Montgomery County Housing Authority in Silver Spring, Md. . . . JOHN E. VANDERSEA serves as advisory engineer for IBM in France . . . Since September of 1971 PETER S. ZILKO has been employed by Allen Bradley Co. (Systems Division), in the marketing department at Highland Heights, Ohio.

1961

A Pennsylvania resident, GEORGE F. FOXHALL, has been promoted to head of the Integrated Circuit and Models Department at Bell Laboratories in Reading. He will be responsible for the design and process development of integrated circuits. After joining Bell in 1961, he became engaged in germanium device development and devised a new technique for the diffusion of arsenic in germanium at temperatures up to 900 degrees Centigrade. Later he was involved with the development of a variety of miniature silicon diodes. Recently Mr. Foxhall has been concerned with the applications of ion implantation to the fabrication of devices . . . DANIEL D. GELLER is employed as director of the Division of Equal Opportunity, U.S. Environmental Protection Agency, Philadelphia, Pa. He, his wife, and children, Lara 4½ and Jennifer, 3, reside in Cherry Hill, N.J. . . . U.S. Army Major NORMAN I. GINSBURG has moved from California to Georgia . . . DR. PETER J. NATALE, who lives in Canton, Mass., is a biochemist at MIT in Cambridge . . . Senior programmer/analyst for the Depositors Trust Company, Augusta, Me., is DAVID Q. OLSON.

THOMAS J. PEARSALL of Northford, Conn., works as plant manager for RSC Industries, Plasma Division, in North Haven . . . ROBERT W. SCHOMBER has employment as director of manufacturing with Thunderbird Products Corp., North Miami, Florida . . . On sabbatical leave from Berkshire Community College, Pittsfield, Mass., is ROGER W. STRICKLAND who currently resides at the University of California at San Diego. At Berkshire he is director of the Regional Computer Center and also chairman of the Department of Computer Science . . . PROF. WILLIAM B. PEIRCE is an associate professor at Cape Cod Community College in West Barnstable, Mass.

1962

DR. KENNETH J. ANUSAVICE, who has been serving as technical analyst for the U. S. Atomic Energy Commission at the Savannah River Operations Office in Aiken, S.C., now lives in Augusta, Georgia . . . BERNARD J. MEISTER who used to live in Midland, Mich., has moved to Auburn. He is with the Dow Chemical Co. in Midland.

1963

ROBERT M. MELLOR of Northbridge, Mass., has taken out nomination papers

for a three-year term on the Town Road Commission. He is a registered professional engineer and is employed as assistant division line superintendent with the Mass. Electric Co. in Worcester. A former chairman and member of the Northbridge High School Building and Site Committee, he is also a member of the Democratic Town Committee.

1964

CAPT. ROBERT S. NAJAKA has graduated from the Air University's Squadron Officer School at Maxwell AFB, Alabama. He was specially selected for the 14-week course in recognition of his potential as a leader in the aerospace force. He is being re-assigned to Vance AFB, Okla., as an aircraft maintenance officer. Capt. Najaka has served in Viet Nam . . . CHARLES H. PEIX, JR., teaches mathematics at Canton (Mass.) High School . . . PAUL J. SROKA is an engineer with Transco Products, Inc., Venice, Calif.

1965

The appointment of THOMAS P. ARCARI to the position of engineer in the civil engineering department at Northeast Utilities Service Co., Hartford, Conn., was recently announced. He began his utility career as an assistant engineer at Northeast Utilities in 1969 and is a registered professional engineer. Previously he was with Combustion Engineering of Windsor, Conn., and Sikorsky Aircraft in Stratford. . . DR. RICHARD N. JOHNSON is a fellow in biomedical engineering at Johns Hopkins Medical School, Baltimore, Maryland. . . The Public Service Co. of (Manchester) N.H. employs PHILIP C. MARTIN, assistant relay engineer . . . A Somerset, Mass., native, GERALD F. MORRIS, has been named an assistant treasurer of Textron Inc. of Providence. Since he joined Textron in July of 1970 he has served as assistant to the treasurer. He also is an evening faculty member at Bryant College Graduate School. Prior to his joining Textron he was with the New York Telephone Co.

ROLLIN K. CORWIN was recently appointed as the Southwest regional manager of Airpax Electronics in Houston, Texas. In his new position he is directly responsible for training, technical assistance and sales supervision for the Controls Division product lines for Texas, Oklahoma, Louisiana and Mississippi. Mr. Corwin has been in electronics as a service engineer for both analog and digital control systems in the process and power industries, sales engineer in the petro-chemical industry and later had sales responsibilities for digital computing systems in South Texas, Louisiana and Arkansas.

1966

Born: To Mr. and Mrs. PETER J. LUDLESS, a daughter, Noelle Marie, on December 24, 1971. Peter is with the Public Service Electric & Gas Co. of New Jersey in Newark. The family lives in South Plainfield, N.J.

DR. LIONEL A. CARREIRA is a research associate at the University of South Carolina in Columbia . . . RONALD C. HAYDEN holds the post of sales engineer at the Foxboro Co., Baltimore, Md. . . . JAMES E. LOOMIS serves as resident engineer for Stone & Webster Engineering Corp., Boston, Mass. . . . Project manager for J. M. Rosa Construction Co., Norwich, Conn., is JOHN V. MAGNANO who resides in Westbrook . . . JOHN P. SEFERIADIS, who has been with the Field Office at Lake Yellowstone National Park, Wyoming, has relocated in New Bedford, Mass. . . . LRC, Inc., of Hudson, N.H., has announced the appointment of HEYWARD S. WILLIAMS of Amherst as chief engineer. He brings to LRC, Inc., a depth of experience in signal processing, log video amplifiers and miniature power supplies. Previously he was a design engineer on the technical staff of Sanders Associates, Inc., Nashua, N.H.

1967

Married: MATHEOS S. KALFAYAN to Miss Nancy G. Bejian in New York City on July 10, 1971. ROUMEN B. KORDOF, '68, was best man. Since receiving his MBA from the University of Pittsburgh in 1970, the groom has been employed by Inland Steel Company, East Chicago, Indiana. The newlyweds are living in Griffith, Indiana.

"Estimating the Costs of Gas-Cleaning Plants" is the title of the article which J. R. F. ALONSO wrote for the December issue of the magazine *Chemical Engineering*. The author is presently completing his Ph.D. requirements at the University of Melbourne in Victoria, Australia. His professional experience includes two years in the computer department of The M. W. Kellogg Co. and one year as an IBM research assistant at the MIT Computer Center. He has also been a demonstrator in the Department of Industrial Science at the University of Melbourne . . . U.S. Army Captains EDWARD A. GALLO and ROBERT J. GALLO, '68, are both currently serving in Viet Nam. Capt. Edward Gallo is assigned as a system analyst with the directorate of public safety, Civil Operations and Rural Development Support (CORDS) and is stationed in Saigon. He recently completed an assignment at Fort Bliss, Texas, where he received his master's degree in mathematics from the University of Texas at El Paso. Capt. Robert Gallo is assigned as an engineer staff advisor with Headquarters, Second Regional Assistance Group in Pleiku. He was formerly employed by the Connecticut State Highway Dept. The brothers recently spent a leave together in Saigon . . . STEPHEN R. LUBER is a student at the University of California Medical School, San Francisco, California . . . ERNEST L. SMITH, JR., SIM, has announced his candidacy for re-election to a three-year term on the Auburn, Mass. School Committee. A 23-year service veteran of the Cincinnati Milacron-Heald Corp., Worcester, he is presently chief industrial engineer. Mr. Smith said that he is seeking re-election "so as to continue and maintain continuity of program, and that his experience should offer good balance for the town in program, budget knowledge and control."

1968

Married: CHESTER J. KASPER to Miss Carol E. Hauger of Williamstown, Ct., on November 23, 1971. Mrs. Kasper, a graduate of Ohio University, Athens, Ohio, is a teacher of special education in the Glastonbury schools. The groom is a design engineer for Pratt & Whitney. . . . STEPHEN W. PETROFF to Miss Carla Elaine Oswald on December 17, 1971 in Portuguese Bend, Calif. Steve is an assistant highway engineer for the State of California Division of Highways, Los Angeles.

Purdue University Propulsion Center has employed FRANCIS L. ADDESSIO as a research assistant. He lives in West Lafayette, Ind. . . . Army CAPTAIN JOHN A. CAPRIO recently was assigned to the 504th Military Police Battalion's Headquarters Detachment near Da Nang, Viet Nam, as adjutant. He entered the army in July 1969 and was last stationed in Germany. He holds the Army Commendation Medal . . . 1/LT. GEORGE DAVAGIAN, JR., who taught at the Engineer School at Fort Belvoir, Va., until September 1971, is now stationed in the Central Highlands, Viet Nam. He is currently in charge of all the surveying in a road-building project slated to be finished in April 1972 . . . RICHARD A. FORMATO of Charlton, Mass., has been studying as a graduate student in the Department of Electrical Engineering at MIT . . . BERTON H. GUNTER, who received his master's degree in mathematics in 1971, works as a graduate teaching assistant at the University of Illinois . . . PAUL G. LARINI is an actuarial assistant at State Mutual in Worcester . . . JOHN D. MacDOUGALL, JR., has accepted a position as a mechanical engineer with Mohasco Industries, Inc., Amsterdam, N.Y. . . . Purolator, Inc., of Rahway, N.J., employs JOHN S. MAZUR, project engineer.

JACK S. SIEGEL serves as a plan manager for the Environmental Protection Agency, Research Triangle Park, N.C. . . . Studying for his MBA at the University of Massachusetts, Amherst, is CARL P. STEELE who shares an apartment with ANDREW L. PIRETTI in Holyoke.

1969

Married: EDWARD L. GRIFFITH, JR., and Miss Barbara McDermott in Manhattan Beach, California on September 18, 1971. Ed is a civil engineer for the State of California Department of Highways, Los Angeles. The couple lives in Inglewood, Calif. . . RICHARD J. WARREN to Miss Karen C. Ettinger of Ridgefield, Connecticut on December 26, 1971. RICHARD P. ROMEO served as best man. The bride is a graduate of Ithaca College, Ithaca, N.Y. Dick is employed at Electric Regulator Corp., Norwalk, Conn., where he works as a sales representative. He recently received his MBA degree from the

Amos Tuck School of Business Administration at Dartmouth College, Hanover, N.H.

Born: To Mr. and Mrs. STANLEY J. GOLDMAN, a daughter, Keri Lynn, on October 12, 1971. Keri joins her brother, Chad, who was two years old last July. Stan is a graduate teaching assistant at Northeastern University and will receive his master's degree in political science in June.

DAVID H. JOHNSON was discharged from the army in January and has returned to work at the New England Telephone and Telegraph Co. in Springfield, Mass. . . . A Laurel, Md., resident, RONALD C. LEWIS, has the position of staff civil engineer at Leavitt and Sons, Inc., Hyattesville, Md. . . . ROGER W. MILES has been discharged from the army and is with the General Electric Co., Ashland, Mass. A manufacturing systems engineer, he resides in Plymouth . . . USAF 1/LT. DOUGLAS A. NELSON has arrived for duty at Kunsan AB, Republic of Korea. Lt. Nelson is an F-4 Phantom fighter-bomber pilot. He previously served at George AFB, Calif. He was commissioned in 1969 upon graduating from Officer Training School at Lackland AFB, Texas . . . LT. THOMAS F. TAYLOR, USA, has completed a Field Artillery officer basic course at the Army Field Artillery School at Ft. Sill, Okla. Lt. Taylor entered the army in January 1971 . . . PHILLIP R. WILSEY, JR., is a mechanical design engineer for Pratt & Whitney Aircraft, East Hartford, Conn.

1970

Married: ALAN S. BREITMAN to Miss Pamela Rutman of Worcester, Mass., on November 21, 1971, in Chateau Garod, Brookline. Mrs. Breitman, a senior at Northeastern University, is majoring in nursing. Alan is a computer programmer at the John Hancock Mutual Life Insurance Co. in Boston. The couple lives in West Roxbury . . . JOHN M. GALVIN and Miss Constance D. Bruso of North Brookfield, Mass., on December 12, 1971. Among the ushers were JAMES F. FORD and KENNETH H. MORGAN. The bride is a graduate of the Memorial Hospital School of Nursing, Worcester, and is a staff nurse at the hospital. John is a graduate student at Northeastern University where he is studying actuarial sciences. He also is an actuarial assistant for State Mutual Life Assurance Co., Worcester. The Galvins reside in Worcester...ROBERT J. MULCAHY to Miss Barbara George Rosenfeld of Lawence, Mass., on December 4, 1971. Mrs. Mulcahy, a graduate of Becker Junior College, has been employed as a medical secretary at Bon Secour Hospital in the X-ray department. Her husband is with Bell Labs Research Center, Cranford, N.J. . . . JOSEPH CASCIO, JR., works as a process engineer for Arizona Portland Cement Co., Rillito, Arizona . . . WILLIAM J. HAKKINEN and his wife have purchased a home in Groton, Conn. . . . LEONARD POLIZZOTTO, who received his MS from WPI in February, is with the American Telephone & Telegraph Co. (Long Lines) in New York City . . . 1/LT DAVID T. ROCKWELL received a master of business administration degree recently from Western New England College, West Springfield, Mass. He received his regular Army commission in June 1970. First assigned to the Army Finance Corps, he was given a temporary assignment at WNEC to complete his MBA degree. He is now awaiting orders to a new assignment. While studying at WNEC Lt. Rockwell assisted the director of the Community Health Education Commission in West Springfield.

1971

Married: GEORGE J. BAKEVICH and Miss Joyce E. Leslie of Worcester, Mass., on June 19, 1971. George, who was awarded a fellowship, is presently a graduate student at the University of Utah where he is working for his master's degree in nuclear engineering. He will be doing his thesis research at the National Reactor Testing Station in Idaho Falls, Idaho. Currently he and his wife reside in Salt Lake City, Utah . . . MICHAEL H. TUREK to Miss Sharon Wagner of New Britain, Conn., on June 26, 1971. Michael is an MBA graduate student at the University of Connecticut.

JOHN J. BOURSY, JR., is employed as an electronic engineer in the Aural New and Changed Facilities Branch of the Broadcast Facilities Division of the Broadcast Bureau of the Federal Communications Commission in Washington, D.C. . . . Serving as a graduate teaching assistant in the chemistry department at the University of Virginia is STEPHEN A. DIMING of Charlottesville, Va. Last summer he did contraceptive steroidal drug research for F. Hoffmann-LaRoche & Co., Ltd., in Basel, Switzerland . . . JOHN L. LANDALL serves with the U.S. Army Corps of Engineers, N.E. Division, Waltham, Mass. . . . ROBERT H. MANDEL is with the Raytheon Co., Sudbury, Mass. . . . GARY R. MASON has been appointed to the School-Community Council in Webster, Mass. The Council will advise and assist the School Committee in bringing about a quality education program for the town. Gary is employed by Stevens Linen Associates in a production management capacity . . . SPAFFORD A. MARTINDALE, JR., works for Lyon Bros. Co., Inc., West Boylston, Mass. . . . HERBERT T. NOCK of Marblehead, Mass., has been employed by the General Electric Medium Steam Turbine Department in Lynn . . . AJIT S. PATEL serves as a mechanical engineer for Precision Piping Assoc., Inc., Newton, Mass. . . . RICHARD P. SAN ANTONIO, a fellowship student at MIT, is working for his master's degree in electrical engineering . . . ROBERT L. SIMONDS writes that he has accepted a job offer at Jackson and Moreland International Inc., Boston, Mass., and that FRANK D. MANTER, '67 is also employed by the same company . . . NORMAN W. SOUSA, JR., is with the Sousa Corp., West Hartford, Conn. . . . DENNIS J. STABA works for Close, Jenson and Miller of Wethersfield, Conn.

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feedback

To the Editor:
Have just been reading the fine December issue of the Journal with its emphasis on athletics at WPI. It brought back memories of other days and prompted me to pull out my old scrap book which is filled with mementoes of the 1911-1915 era. There in scrawled longhand was the text of remarks which I was asked to make at the Freshman banquet of the Class of 1915. This affair, which was held in the upstairs dining room of Putnam and Thurston's restaurant on Main Street, was undoubtedly held in January 1912, sixty years ago.

"I also want to say just a few words about the future of athletics in general at Tech and the relation of this class to them. We are entering Tech at a unique time in the history of her athletics. It seems to me that they are about to undergo a radical change. In the past they surely have not been of the highest order, one of the chief reasons being the obvious lack of proper equipment such as a suitable athletic field and gymnasium, but if the present campaign to procure such advantages is successful, as it now promises to be, I can see no reason why Tech's athletics should not compare with the best."

The speech, such as it was, was prophetic if nothing, for, less than four years later during Commencement week in 1915, Alumni Field (our first athletic field) was formally dedicated and the cornerstone of the new gymnasium was laid.

I am sending the above to you thinking that it might be of interest.

Maurice G. Steele, '15
Rome, New York

To the Editor:
This has been my first opportunity to thank you for the very excellent departmental presentation in the latest Alumni Journal. We appreciate greatly this presentation which I thought was both accurate and complimentary. You and your staff are to be congratulated.

Sincerely,
Robert W. Pritchard
Head, Department of Physical Education and Athletics

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WPI journal

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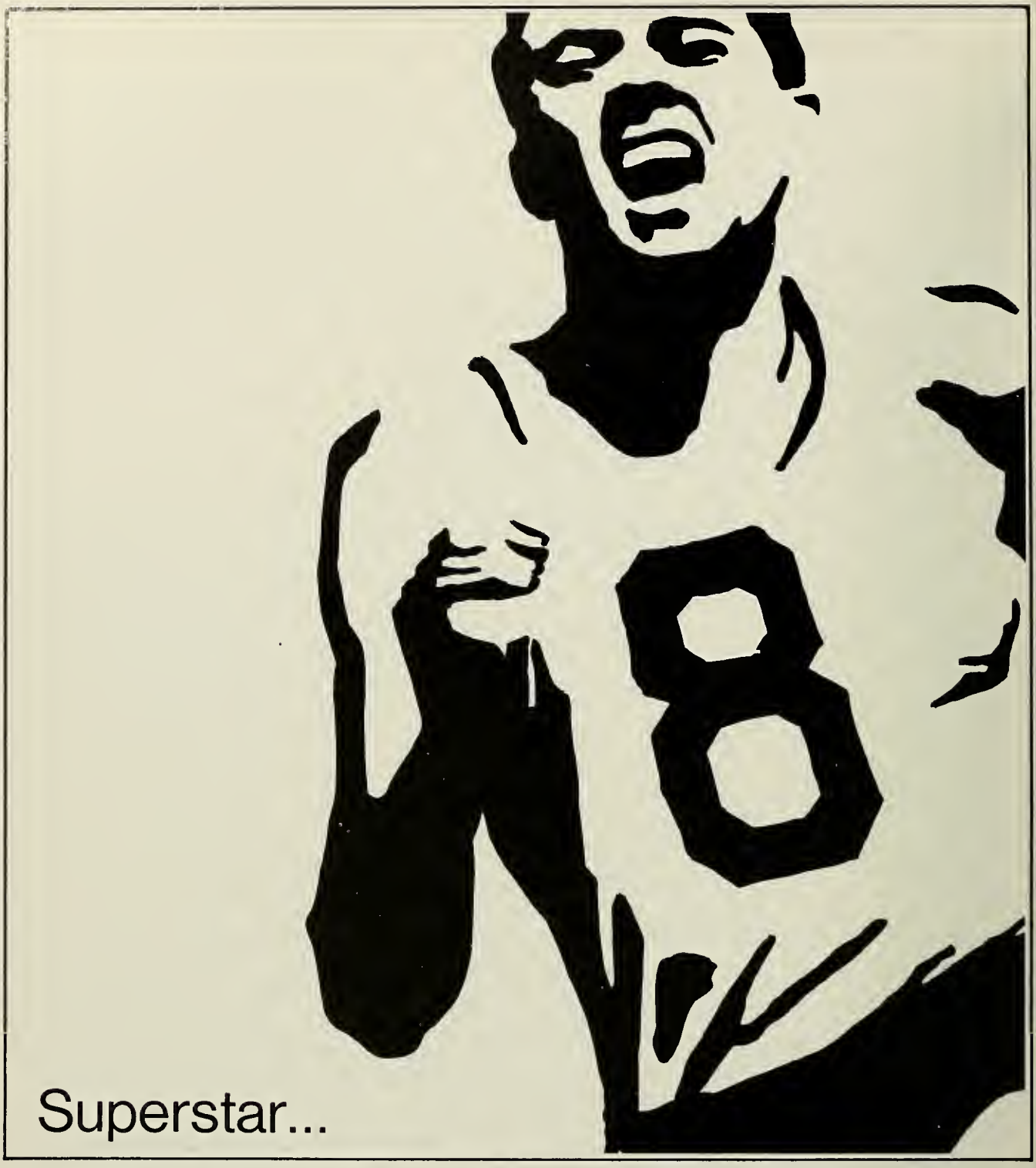

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WPI journal

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On the cover: Electron micrograph of double viral DNA rings synthesized in the test tube at Stanford University School of Medicine. Actual length across is 2 microns (one micron equalling one-millionth of a meter). Photo by California Institute of Technology.

EDITOR'S NOTE

As we go to press, we have just learned that *Science and Public Affairs* (formerly known as *The Bulletin of the Atomic Scientists*) is going to reprint the genetic engineering material from this issue of the *WPI Journal* in their November issue.

How Dare You Change My Magazine!

by Walter B. Dennen, Jr., '51
Chairman, Alumni Publications Committee

THE JOURNAL these days just isn't the magazine it used to be. The articles are different from those that have traditionally appeared in the *Journal.* Even the look is different.

"Why?" you may be asking. Why the changes, and where is the *Journal* headed?

For more than a year the Alumni Publications Committee has been working with the editor, and under the guidance of the Alumni Council, to evaluate the *Journal.* We have asked ourselves questions: What have been the goals and purpose of the *Journal* in the past, and how well were they achieved? What should those goals and purposes be for the present and future? How can the *Journal,* or any other kind of publication, best serve the alumni, the Alumni Association, and WPI itself?

The questions are difficult and sensitive. We are still searching for some of the answers. But the broad outlines of the *Journal's* aims and future direction have been worked out and given the endorsement of the Alumni Council and its Executive Committee.

Alumni Interest and Continuing Education

As we see it, the *WPI Journal,* like any alumni publication, has two reasons for being. First, it is the primary link between WPI and most of the alumni. The *Journal,* therefore, is an essential element in maintaining alumni interest and involvement in the Institute.

Second, the *Journal* is a prime — and perhaps sometimes overlooked — vehicle for the continuing education of alumni. WPI exists to educate people to deal with science and technology. That education need not, and should not, stop with the granting of a degree — especially in today's dynamic environment. In achieving the goal of contributing to alumni's continuing education, the Journal automatically contributes to the first goal, that is, stimulation of alumni concern for and identification with WPI.

The Alumni Publications Committee has adopted a "theme issue" concept as a means of strengthening the *Journal's* role as an educational tool. In general, each issue will deal with a single subject, usually in several articles. Subjects are chosen with two criteria in mind: they should be interesting and meaningful to alumni, and they should relate directly to WPI.

We hope to deal with significant issues of the day, showing how the issues relate to WPI people. The *Journal* will depict, moreover, how WPI is responding to current problems in terms of institutional structure, educational methods and concepts, research projects, the WPI physical plant, or whatever approach may be most appropriate to the subject.

Of course, many fine articles do not fit the theme concept, yet warrant presentation. Therefore, we will periodically break the theme mold with a catch-all (or perhaps we mean "catch-up") issue containing a potpourri of articles and features.

We haven't said anything about specific alumni information, the class notes section. And the reason is that we don't plan any major changes in the section, except to spotlight some of the more interesting stories about individual alumni.

Increased Distribution

Beginning with the October issue, the *Journal* will be distributed on campus during the academic year to all WPI students. This move is long overdue and should afford students a better understanding of what the Alumni Association is and does. In other words, we begin to develop alumni identification at the earliest possible stage.

Genetic Engineering

This issue of the *Journal* is very special in many ways. It has a theme that dramatically demonstrates how the *Journal* can contribute to our continuing education. The topic, genetic engineering, may disturb us. But we cannot ignore it merely because of its implications. And the information presented on the accompanying pages deals with implications and consequences, not with the mechanics of the subject.

The articles represent a somewhat condensed publication of a symposium held on campus on May 2, 1972. The symposium was in conjunction with the traditional Honors Day Convocation, with honors extended to include the four participants, who were given honorary Doctor of Humane Science degrees. (One result of this changed format was that honorary degrees were not awarded at Commencement this year. However, Dr. James Danielli, a seminar participant, returned to deliver the Commencement address.)

Simply stated, genetic engineering is man's ability to alter hereditary processes by chemical and surgical means. It is here now, in laboratories throughout the world, in experimentation with microscopic animals and, to a certain extent, with human egg cells. The inherent moral and legal questions are profound, and questions cannot be overlooked. In the *Journal's* April issue, Ben Bova said: "The power is there, when we can begin to tinker with our own heredity, to produce the kinds of people we want in the colors, sizes, and shapes that we want. This may be more power than any political system that we can think of today has a right to own. Many of the world's leading biochemists and geneticists are already asking themselves, their colleagues, and the public: What should we do? Should we continue these lines of investigation? How do we handle this power once we have it? A very basic question arises. . . . how are we going to deal with the science and technology that we have developed?"

In a recent issue of its journal, which appeared just prior to the May symposium, the American Medical Association stated that the ethical implications of experiments that would seek to implant a "test-tube baby" into the womb of a woman, and other experiments in genetic engineering, should be thoroughly explored before such work is applied to man.

It is interesting to note that the April issue of the *Journal,* built on a theme of the 1972 Intersession program on campus, offered a natural introduction to this theme issue. Such was not our intent. But perhaps it clearly shows the interrelations that exist among diverse topics.

WPI has recognized and anticipated evolutionary changes. The Institute is becoming increasingly involved with the life sciences. Curricula are relating technical studies to social needs and problems. At the same time a surprising number of students are using the WPI bachelor's degree as a springboard to medical school.

It is therefore fitting that WPI should be among the first educational institutions to publicly address the questions and problems inherent in genetic engineering.

Readership Survey

We anticipate that alumni will benefit from the "new look" in the *Journal.* But the Publications Committee is a relatively small group of people. And we want to be certain. That is why we will soon be conducting a readership survey. We hope that most alumni will respond and make their wishes and opinions known to us. We will publish our findings in a future issue of the *Journal* and will be guided in our decisions by alumni sentiment. ■

feedback

To the Editor:

The April issue is outstanding. Intersession '72 is just fantastic!

From a layman's standpoint I'm involved in our local education activities. (I'm president of the Hatboro-Horsham (Pa.) Senior High School Home and School Council.) As a parent I have four boys in school. One of my boys will enter our new open space design middle school. I met the new principal last week (he's from Fitchburg High School and Fitchburg State College). Some of the ideas of Intersession '72 would fit into his planned program. I'd like to get a copy of the April Journal for him. Would you kindly forward it to me?

I enjoyed "The Next 100 Years" too. Keep up the good work!

R. W. Nikander, '48

To the Editor:

The February issue of the Journal offered interesting and valuable information on environmental problems.

But, perhaps the most significant aspect is that it was printed on 100% recycled paper. As greater amounts of recycled paper are used, it will be economically competitive with virgin fibers, and even hopefully, less expensive.

David J. Gumbley, '68

Editor's Note:

Mr. Gumbley appears to have been misled by the note which appeared on page 1 of the February issue. Only the cover was printed on recycled paper; the remainder of the issue was on a nonrecycled paper.

To the Editor:

Congratulations on your last two Journals. In the last one the paper was excellent and so was the subject matter. Also I found that the typography could not be improved upon. You should be proud of this issue.

I was also deeply concerned with the *Tech News.* It was the most horrible example of subject matter, and no effort was made to have the printing anywhere near correct. Someone ought to straighten out the matter. The mourning of a drug addict's death was a far cry from news of student activities.

But this latest Journal really shows that Tech is trying to bring forth students of real responsibility.

Dana S. Greenlaw, '24
St. Petersburg, Florida

Genetic Engineering

Man's Responsibility to His Future

by Hudson Hoagland

We humans share the basic mechanisms of biological evolution with all living things. Evolution by natural selection is no longer a theory but a fact. It involves chance changes from time to time in the structure of the molecules comprising the genetic material. This material is made up of nucleic acids (DNA and RNA), which are long molecular strands in the form of double helixes which carry information in their organized structure for the genetic characteristics of all living things – animals, plants and even viruses. DNA located in the nucleus of the cell acts as a template to produce RNA that then diffuses from the nucleus into the cytoplasm and there acts itself as a template to link together some 20 amino acids to form the vast variety of proteins which include, of course, the thousands of enzymes that regulate the chemistry of living cells. Changes that occur from time to time in DNA structures are called mutations and may result from effects of high energy radiation, including cosmic ray hits on the molecules, or action of certain ingested chemicals, or simply copying errors when cell division takes place. Such changes in the DNA germ plasm are propagated to the next generation after the manner of a scratch in a master recording of a Beethoven symphony that serves as a template for reproducing more records. The flaw will, of course, also be reproduced on the copies.

Over 99 per cent of mutations are lethal and so self-eliminating or harmful to the developing organism. Only a tiny fraction of 1 per cent may give the developing organism a survival advantage by natural selection over its competitors. Biological evolution of a species is thus a very slow and wasteful process, usually measured in millions of years, with thousands of new forms perishing for each one that survives. We people are a distillate of 3 billion years of this process of evolution.

In the past man has not tampered with his own biological evolution – the only exception I know of is his almost universal taboo against incest. But by substituting artificial selection in breeding for the very slow processes of natural selection, he has produced a vast number of domestic plants and animals with, for him, desired qualities. His reluctance to practice eugenics on himself is inherent in much of his ethical and religious beliefs, but it is also due to ignorance as to how one could selectively breed for desirable human characteristics without at the same time producing deleterious characteristics.

One of the most magnificent advancements of science of all time has been the discovery over the past 20 years of the chemical nature of the gene, the alphabet and sentence structure of DNA and RNA as a remarkable information system – a blueprint – to tell the developing embryo how to make a copy of its parents. This knowledge has also suggested ways to modify the DNA structure to eliminate errors of metabolism that cause a host of diseases. According to H. V. Aposhian 36 million future life years were lost in 1967 from birth defects (primarily genetic defects) in the United States. This is 4.5 times as many future life years as those lost annually from heart disease, 8 times as many as those from cancer and 10 times as many as those from stroke. The new knowledge of inheritance thus has great potential for medicine and it may also some day offer ways to improve human intelligence and other socially desirable qualities. While there are still enormous gaps in our knowledge as to how to do these things for man, it is probable that in a few decades we shall be able to do some of them, thus producing possible great benefits, or perhaps a veritable kettle of worms.

A unique thing about man is that he is the only animal that has now, or soon will have, knowledge to direct and control his own biological evolution. The significance of this in terms of law, medicine, ethics, and human values is what this issue of the *WPI Journal* is about. ■

DR. HUDSON HOAGLAND and a colleague at Clark University founded the Worcester Foundation for Experimental Biology in 1944, in a barn near the campus. The Foundation has grown to a world-famous research institution employing over 300 scientists and technicians, studying cancer, endocrinology, neurobehavior, and reproductive biology. Among the results of the Foundation's work is the birth-control pill.

Dr. Hoagland served as president of the American Academy of Arts and Sciences from 1961 to 1964 and as president of the Society of Biological Psychiatry in 1967-68. The American Humanist Association named him Humanist of the Year in 1965, and WPI awarded him an honorary degree the following year.

With an internationally known broad range of interest and expertise in scientific and social areas, Hudson Hoagland is uniquely qualified to moderate this symposium.

The Good That Can Come

by James F. Danielli

Genetic engineering is becoming possible. The time scale n which the different acts in this scene will occur is npredictable, and the consequences of these acts are also npredictable. Therefore, it's entirely desirable that we hould have intensive public discussion on this matter efore we become too deeply embedded in its conseuences. Indeed, one may say that of all the topics which ught to be in the public rather than in the private domain, nd which have hitherto lain mainly in the private domain, enetic engineering is perhaps the most important for us to onsider.

In general, too much attention has been paid so far in ublic debate to the role that genetic engineering may play n changing the future of man himself and too little ttention has been paid to the other uses which might be nade of genetic engineering. I shall nevertheless make one omment on the desirability of human genetic engineering. vidence appears to be accumulating that our civilization is ow operating close to the limit of human capacity, and if ve expect our civilization to advance beyond the point hich it has already reached, then it may be necessary to o more than simply abide with what we have now. However, although we have these grave troubles which lead ne to say that we are perhaps reaching the limit of our apacity, I think we should not blame ourselves too much. hese troubles arise from the way in which we have volved. In other words, we're not responsible for our volution, although we are to some extent responsible for hat we do now. But man as he now exists did not evolve or our present life.

The Evolution Time Scale

The time scale of evolution, for a significant change in a pecies like ourselves, lies somewhere between say 100,000 years and 10,000,000 years. Now, man moved out of the food-gathering stage of life about five to ten thousand years ago. In that period there has not been sufficient time for a significant alteration in the genetic structure of man. Therefore, one is bound to conclude that the genetic system, and the structure and functions we operate with now, are those which evolved before civilization developed, before men began to live together in communities of more than a few dozen people. The forces of natural selection, which have determined the nature of the human genetic system and given us our basic aptitudes, were not those of civilized life but those operating on man in his food-gathering stage of existence. And it's quite an extraordinary thing that we do as well as we do, considering the circumstances in which we arose. If we are to move into more advanced systems of civilization, then there is probably no choice but to study the techniques of genetic engineering and the theory of genetic engineering, because natural selection, which has brought us to where we are, operates on too long a time scale to be effective in solving the problems with which we are now confronted.

I'd like to give some sort of feeling for what is possible within the whole domain of genetic engineering. What, in other words, could we hope to achieve by artificial synthesis of life? I can do this best by giving a few figures. If you take an ordinary protein with 150 amino acids in it, the total number of alternative forms of that protein is 10^{195}. That is an inconceivably large number. In fact, it's so inconceivably large that one can only begin to appreciate it by thinking about other smaller but still immensely large numbers. Now, how do we do that? Well, suppose we take

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DR. JAMES F. DANIELLI and his team of researchers at be State University of New York at Buffalo have successully synthesized living cells from components. While he has reat confidence in man's ability to engineer genes, he ecognizes the scientist's need for guidance from society to nsure that the application of such knowledge produces an nprovement in the quality of life for all. Dr. Danielli is a ative of England, where he earned three doctorates (in hemistry, physiology, and biochemistry) from the univerities of London and Cambridge. He is presently director of be Center for Theoretical Biology at SUNY/Buffalo.

the Big Bang Theory of the origin of the universe. The latest figure that I've seen for the duration of the universe since the bang is 10^{30} seconds. Now suppose we divide 10^{30} into 10^{195}; we wind up near enough to 10^{150} different proteins would have to be formed every second in order to make one of every possible protein of this particular chain length. To do this, an inconceivably large number of proteins would need to be synthesized every second. Could that vast number have been synthesized? Let's say they contain just one electron per protein (that's of course a gross over-simplification). The present estimate is that there are about 10^{80} electrons in the universe. Now if we divide 10^{30} into 10^{150} (which is the number of proteins we have to make every second) we see each electron would have to make about 10^{70} proteins per second. Chemistry doesn't happen at that rate.

Now, what does this mean? It means that even if we consider only one type of protein, it has been absolutely impossible for one type of each of the possibilities to have been generated through the whole of the history of the universe. And this in turn means that far from natural selection having been able to operate upon all the possible variants of life and the protein structure and so forth, only the most minute trace of the possible variants could ever have existed. This situation becomes even worse when we move from considering proteins to considering whole organisms. Kim Atwood calculated that the number of variants of E. Coli bacteria is $10^{2,000,000}$ If we make the same calculation for man, it's easier to express it in a different way. The possible variants of man are of the order $10^{10^{12}}$. Now that is an even more inconceivably large number than any I've mentioned before. In other words, the prospects opened by artificial life synthesis and genetic engineering are infinitely far beyond the range of human understanding at the present time and may always be beyond the range of human understanding. And as an experimental science, of course, genetic engineering cannot exist in its own right. It can only exist as a feasible enterprise in the light of an appropriate theoretical science which enables us to select from this infinite range of possibilities those which might be most worthwhile investigating. And we must bear in mind that even if the universe goes on as long as it has to date and man practices genetic engineering for that length of time, we could make only a very small fraction of the possible organisms.

Having commented on the scale which is revealed to us, I would like to comment on some issues of greater immediacy. Too much attention has been paid to genetic engineering in relation to man. There are other fields in which, for the time being, it will be much more important – for example, in biological industry. Any chemical which can be made by a biological process can be made with much less pollution and very often with much less cost in the long run; if it's a complex substance, certainly with less cost and with less waste than by present chemical engineering methods. By replacing some of our present industries with others based upon organisms developed for those industries, we can reduce the scale of pollution by a scale of, say, 10^2 or 10^3 for those particular processes. Thereby we may be able to continue in certain ways the process of growth in our industry. This will certainly not be feasible if we are

obliged to rely upon the type of industry we have at this ime.

Another field where we might well benefit is genetic ngineering on plants. At the present time, plant breeders an only produce new plants by acting upon those genes which are already contained in the species. Which means hat a vast number of genes contained in other species are naccessible. But as far as genetic engineering is concerned, *ny* gene that actually exists is available to put into a new pecies by artificial methods. For example, it is probably ossible to take crops like rice and wheat and corn and nsert into them genes for proteins which will raise their utritional value. We might also put the nitrogen-fixing nechanism into them so it won't be necessary to synthesize itrogen to put on the land as fertilizer. One can foresee hat there are possibilities of an agricultural revolution hrough genetic engineering.

Then there are possibilities of taking cells like those rom the nervous system and building a completely ifferent type of computing and calculating mechanism, ne based on cellular systems. This is obviously fairly far in he future, but if you read the literature dealing with nerve ells, you will see that the first steps which can lead to this ort of thing are being made.

Aging

'll conclude by remarking about a study I've begun to nter into myself, which relates to the problem of health are. If one looks at what's going on in the world of health are, one cannot fail to be impressed by the rate at which he costs are rising and by the fact that, although we may ind cures for most of the killing diseases of the present ime, we shall not much extend the life-span of man. ndeed, according to the latest calculation, if all cases of ancer were cured instantaneously, it would add about one nd one-half years to the expectation of life. Now we could lo much better by stopping smoking, as a matter of fact, or y taking more exercise. If all the main killing diseases were bolished (presently killing diseases that is), it would only dd about three or four or five years to the expectation of ife for the average individual in western Europe. The imple reason is that by the time we reach the age of 70 or 0 or 90, we're so full of pathological conditions that if we lon't die of one, then we promptly die in a few months of nother. So, you see, there's absolutely nothing to prevent he cost of health care from escalating to such a degree that t is bound to become intolerable in due course, because very time we discover how to cure something, we also add o the cost.

Now there appears to me to be only one way of pproaching this problem, and that is to find out what the ging process is. Of this we are at present totally ignorant. And then take a look at whether something can be done bout it. For example, it would be very nice if instead of aving tumors and rheumatism and respiratory disorders which make one's health decline as time goes on, one could nstead have these disabilities clocked in at a particular oint, say, so that one lived at a good level of health and hen there was a precipitous decline. A sharp end to life without previous ill health, is much to be desired. One of my older friends, Sir Joseph Barcroft, who was professor of physiology at Oxford, managed this very neatly. He retired from Oxford and established the Unit for Animal Physiology at Cambridge, which he ran very successfully. He went home to lunch with his wife every day. One day he ran to catch the bus to go home for his lunch. He jumped for his bus, he sat down, he died. Now that is a very good way of going out of life. And if we could all do that at minimal cost it would save much money and much grief.

One of the ways of finding out about that possibility is by taking human cells apart and finding out what makes them grow old. And it's not a very simple process. But we do know that human cells, many of them, have a very limited life-span. They can go on for so many divisions, or so much length of time, and then they shut down. By using the techniques of genetic engineering, there is a very reasonable hope that we can find out what the basic process is that determines the life-span of a cell and of an organism and thereby see whether it's possible to adjust the various sorts of clocking devices which turn on in our tissues at different times and make us subject to the diseases of old age. ■

Genetic Engineering

By Whom and For What?

by Paul A. Freund

When someone says that we must improve the genetic inheritance of future generations, what exactly is meant by *we*? Who decides which questions, by what standards, subject to what checks? Lawyers are accustomed to differentiating questions of fact and questions of law, to define the roles of the jury and the judge; here it is necessary to be clear about the difference between questions of science and technology and those of ethics and policy.

The vision of a greater human race, the vision of positive eugenics, might take as its text, ironically, some lines of Walt Whitman: "The pride of America leaves the wealth and finesse of the cities and all returns of commerce and agriculture and show of exterior victory to enjoy the breed of full-sized men, or one full-sized man unconquerable and simple." "Full-sized men" – how do we recognize them (again the unanalyzed "we"), and "simple" men – how do we know their value for survival? It is much easier when we are breeding farm animals, for milk or meat or pulling power. During World War II there was a shortage of penicillin, a newly discovered drug, in the North African theatre of operations, and the question arose whether priority should be given to soldiers suffering from battle wounds or to those afflicted with venereal disease. The commanding officer, against the advice of his consultants, decided to give priority to the venereal disease sufferers, and justified his decision in a persuasive way. The overriding goal of his command was to put the maximum number of troops on the front line in the shortest possible time. The battle-wounded would require a longer time to recuperate, and they posed no danger of infection to others; therefore their claims must be subordinated. For better or worse, the goals of human existence are rarely so circumscribed and the choices so readily rationalized. And the further we peer into the future – from decades to centuries to millennia – the more problematic become our priorities, the more humble our pretensions to wisdom. Who shall choose, even for the sake of the survival of the species, between artists and scientists, poets and engineers, men of cognition and men of feeling?

Perhaps positive eugenics should be looked at in a closer perspective of time. The most nearly available technique for the controlled engineering of offspring appears to be offered by the prospect of cloning, the asexual replication of a male or female progenitor with no interfusion of chromosomes from a second parent. Since the donor's chromosomes are embodied in all his or her somatic cells, there is a practically limitless supply, subject to the availablilty of egg cells into which a donor cell can be nucleated for sustenance, either *in vivo* or (conceivably) *in vitro*. Thus we may be facing a new kind of nuclear explosion, this one of a biological nature. Whether the progeny will in fact turn out to be replicas of the parent is a question for science; possibly mutations will occur, possibly slight changes in nourishment and environment will make a substantial difference, and, particularly in the case of a genius as the forebear, the line between creative genius and hapless incompetence may prove to be a tenuous one. Whether the aggregate gene pool will be impoverished seriously is likewise a basic scientific question.

But the ethical issues go far beyond the scientific ones. What the xeroxing of human beings would do to the fundamental premises of personality, moral responsibility and freedom of will, must give us great pause. The mystery of individual personality, resting on the chance combination of ancestral traits, is at the basis of our sense of mutual compassion and at the same time, of accountability. Within the individual the mystery is a wellspring of striving and aspiration. To become a new edition, indeed only a new imprint of a parent, could undermine these expectations and aspirations and produce a breed of passive creatures waiting for the familiar ancestral scenario to unfold, a breed for whom praise, blame, wonder, and fulfillment would have lost their meaning.

One of the nation's most distinguished constitutional lawyers, PAUL A. FREUND began his legal career as a clerk for the late Supreme Court Justice Brandeis. In a decade of federal service, Freund was on the legal staffs of the Treasury and Justice departments. Since 1940 he has held several special professorships at the Harvard Law School. A fellow of the American Academy of Arts and Sciences, he succeeded Hudson Hoagland as its president from 1964 to 1967. He has written several books, including Ethical Aspects of Experimentation with Human Subjects, *which probes the relationship between medical researchers and their human subjects.*

Perhaps this is the destiny of the race. Perhaps moral premises will themselves have to alter drastically to accommodate the new technologies. If so, we can at least be clear about it and speculate on what the new morality will be like. Some changes have, of course, already occurred in response to scientific advance. Darwinism presented a crisis for literal religionists, as Copernicus had for medieval theology. But these shifts left it possible to retain the essential moral foundations of human responses to human beings; agnostic humanism is at one with revealed religion in its stress on humility and mystery, and the intrinsic human worth that emerges from these avowals of self-limitation. Indeed, as knowledge has grown the horizons of the still unknown have kept receding.

The issue is not whether the search for knowledge should be curtailed; that way darkness lies. The issue is rather whether individual human beings should be constructed with a set of preordained traits, and indeed whether an indefinite number of such identical products should be engineered. This is an issue that transcends scientific freedom, the freedom to inquire and to know, since it can determine for future generations the capacity and the will to know, no less than the possession of other traits of thought and feeling that we regard as the essence of the human. At whatever council table such an issue is decided, there should be spokesmen for the future generations in whose behalf we would be purporting to act, spokesmen like the guardian appointed by a court to represent unborn heirs or infant claimants.

More modest proposals, for negative eugenics, do not escape these problems of standards and procedures in decision-making. A good starting-point for discussion is the case of the mongoloid baby which was the subject of a symposium at the Kennedy Foundation in Washington last November. At a leading eastern hospital an infant was born and diagnosed as suffering from Downs syndrome (mongoloidism), together with an intestinal obstruction which would be fatal in a matter of days unless corrected by a relatively safe surgical operation. The facts were laid before the parents, who decided, in the interest of their two normal children, that the baby should not have the operation and should be allowed to expire in the hospital. The pediatricians took the position that this decision was binding on them, since as they understood the law it would be illegal to operate on a child without the parents' consent. And so the infant was permitted to linger, unnourished, until death came within some two weeks' time.

The first point of interest in this case is the nature of the decision to be made. For the doctors it was a legal decision, controlled by the parents' wishes. For the parents it was a decision conditioned largely on the assumption that the care of the child would devolve upon the family. Neither decision can be said to have been made with full understanding. It is true that one parent must consent to a form of surgery for a child where there is a genuine choice of treatment; but when the choice is between death and a life-saving intervention, the interests of the child cannot be finally willed away by the parents; there are a number of cases where a hospital, seeking instructions from a court in such a situation, has been ordered to perform an operation over parental objection based, for example, on religious scruples against blood transfusion. Those cases, to be sure, did not present the issue of a mongoloid child; but the doctors' position here professed to be based on a general principle of law. Likewise the parents' decision seems to have been based on the assumption of home care, without adequate exploration of the alternative of institutional care (and its costs). In short, there was lacking any forum where all the interests and possibilities could be explored. When it was suggested in the symposium that a hearing in court should have been arranged, with a guardian appointed to represent the child, objection was voiced that lawyers and judges are not experts in Downs syndrome. That, of course, misses the point, namely that the experts should have their full say and that a disinterested arbiter, taking account of the experts' testimony and also of moral standards of judgment, should make the ultimate decision.

What are these moral standards? They are not purely private; they can be educed by reasoning from analogy. Is it legitimate to put another human being to death in order to make life more comfortable, psychologically and economically, for the survivors? Is the case like that of the care of a terminally ill patient, when extraordinary supportive measures may not be taken and the patient is allowed to take leave of life without hindrance — are the prospects of the newly born and the aged dying patient comparable from the standpoint of the possibility for savoring some, if not all, of the wondrous experiences of life as a human being? Is there a point at which this prospect in the newly-born is so attenuated in its range that the offspring should not be regarded as a person (what in medieval theology was termed a monster, not "ensouled")? If the condition could have been discovered prenatally, and if abortion would then have been justified, is infanticide similarly justified? If not, is there an obligation on the part of the state to assume the care of the child when the parents seek to renounce it? Is the case for such a social obligation strengthened where the use and the non-use of prenatal diagnosis tends to correspond to the social class of the mother?

The question about social class is a reminder that lurking throughout the subject is the problem of economic and social inequality and how this factor would relate to the various measures proposed. In legal terms, the problem is the equal protection of the laws — the principle that classification must have a reasonable basis, and that where fundamental human values are involved classification must rest on a compelling public need.

The problem of equal protection has in fact arisen in connection with negative eugenics. In 1927 the Supreme Court considered a case under a Virginia law that required the sterilization of persons in state institutions who were afflicted with a hereditary form of feeble-mindedness. In a summary opinion, Justice Holmes sustained the law, closing his opinion with the quip "Three generations of imbeciles are enough." It used to be fashionable to quote this remark and add: "Mr. Justice Butler dissented." Today we are more likely to be embarrassed by Holmes' jauntiness. Whether such sterilization will have an appreciable effect on the prevalence of feeble-mindedness, in view of the number of apparently normal carriers, is a question for the biostatisticians. But conceding an appreciable effect, the issue of equal protection remains for moralists and lawyers. Is it acceptable to enforce sterilization only upon those in state-supported institutions — manifestly a limitation reflecting differences in social class? In 1970 the Supreme Court came close to reconsidering the 1927 decision, when it granted review of a Nebraska case involving a law that required the sterilization of mentally deficient persons as a condition of their release from a state institution. Fortunately or unfortunately the law was repealed before the case could be heard by the Supreme Court. It is a safe assumption that the Court would have had more trouble with the problem than did Justice Holmes and his colleagues (save for Justice Butler).

The principle of equal protection embodies an important political check, apart from its mandate of distributive justice to those immediately affected. Politically, a control device is likely to receive less thorough consideration as the class of those affected is small and relatively powerless. A law that bears equally on rich and poor, scions of wealth and wards of the state, will receive the kind of scrutiny in its enactment and its administration that the gravity of the subject requires.

Similar considerations apply when we consider straightforward proposals to encourage population control. It is attractive to search for the middle ground of incentives and thereby avoid both the weakness of mere persuasion and the heavy force of legal coercion. In a market economy, incentives tend naturally to be economic ones — subsidies for family limitation, tax burdens for family expansiveness. Unless, again, the result is to be fashioned along lines of economic class, great care will have to be taken to see that the incentives bear equitably upon all classes.

And so, in the end, whether we deal with positive eugenics or negative eugenics or the limitation of population growth, what is possible to accomplish is more than matched in difficulty by questions of what it is right to accomplish and what are the right means to employ. As Einstein said, physics is so much easier than politics. ■

The Morality of Manipulation

by R. Paul Ramsey

Three things are said to evidence the wisdom and greatness of the ancient Chinese people. They invented gunpowder and failed to invent firearms. They invented printing and didn't think of newspapers. They invented the compass and failed to discover America.

A similar attitude, I want to say, should be adopted toward future possible applications of biomedical knowledge. And I want to say that we must all get used to the idea that biomedical technology makes possible many things we should never do. Yet how unlikely it is that we will have any such sense of limits there where we need it most — namely, where technology promises mastery over human genesis, and the alleged perfectability of man's natural endowments.

I might begin by musing over what happened to the title of this symposium. It reads: *"Man's Responsibility to His Future."* Yet in a letter to me in January, President Hazzard was pondering whether seniors and others today might participate more knowledgeably in today's discussion if the title read *"Genetic Engineering: A Humane Technology?"* Or perhaps, he said, *"The Ethics of the Unethical."* While my mention of this may violate good taste and the civil tradition within a learned community, I want only to say that without any stolen Pentagon Papers detailing the decision-making processes around here, it is perfectly obvious what happened in the evolution of that title. It was honed into accord with the most basic, silently operating assumption of the modern age, namely, that we *should* do whatever we *can* do.

Now, *genetic engineering* is, of course, a metaphor. Only by adopting a limited referent for that expression can we make clear what we are talking about. Following the experimental effort, now in process, to change the genes of two small German girls who are suffering from an irreversibly degenerative disease known as argininemia, in the future it may be possible to effect gene-changes in many another existing individual human being (whether conceptus or infant): to alter the gene deficiency that causes PKU, or cystic fibrosis, or sickle-cell anemia, or Tay-Sachs disease, or simply to tell a person's pancreas to start making insulin (which would seem to be a better remedy for diabetes than injections). All such gene changes will be *treatments.* We should call those procedures as a class *genetic therapy,* in order to locate them alongside the non-genetic treatments, such as injections for diabetes, now available for some genetic illnesses. The appropriate metaphor for gene-change treatment when and as it becomes possible, I suggest, should be *genetic surgery* (not genetic engineering).

For that makes it immediately evident that treating the genes of existing patients, born or unborn, will raise no unusual moral questions, no issues not already present in investigational therapeutic trials or hazardous or other last-ditch surgery of any other sort. The sole exception is the complicating factor, which I will not go into, that gene-change surgery may raise serious additional moral questions not raised in other sorts of surgery because of its possibly erratic heritability.

By *genetic engineering*, however, I mean gene changes targeted upon the sperm and ova (or their precursor cells) in the case of suspected carrier couples with the objective of preventing the transmission of life suffering from serious genetic defect. Now since the word "gamete" is the generic term for ova and sperm and their precursor cells, we might call this "genetic engineering by gametic manipulation." But since that's a large mouthful, let us simply say *germinal engineering.*

This is a stipulative definition of our topic. Yet I hope it is a persuasive one since only so can we *keep clear* an important distinction between genetic engineering of gametes and the genetic treatment of individual patients, born or unborn, and since only in this way can we *make clear* the serious moral issues we will face in contemplating the possibility of genetically engineering our children when they are nothing.

For it should be immediately evident that, as a proposal, genetic engineering (in the limited meaning I give that expression) is first of all a proposal for preventing the

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transmission of life suffering from serious genetic defect. Such a new procedure would have to be compared with available alternatives in the practice of preventive genetic medicine, would have to be compared with optional uses of our rapidly increasing genetic knowledge in responsible parenthood or responsible non-parenthood. Those alternatives are, to mention a few, genetically conditioned prohibitive marriage licenses, genetically motivated sterilization, using three contraceptives at once, abstinence, or hieing yourself away to an old-fashioned Catholic monastery or nunnery if you can find one.

Now what would prompt anyone to adopt one or another of those seemingly more radical preventions as against the promise of germinal engineering that we can go ahead and have better babies anyway? Or what would prompt me to argue that genetic engineering cannot be the indicated, or even a choiceworthy, application of our knowledge of genetics?

Simply because, when measured by the principles of sound ethics or by the received canons of medical ethics, germinal engineering would be an immoral experiment on the child-to-be — immoral because not consented to by the primary subject; immoral because, when he is not yet, the child suffers no defect which could justify anyone in consenting on his behalf medically, or justify a physician in making the risk-filled balancing judgment which ordinarily warrants investigational trials or last-ditch efforts on actual patients (such as making a judgment to treat an unconscious patient by the side of the highway). Rightly ordered concern for the child-to-be, I suggest, would compel us to conclude that we ought not to choose for another the possible procedurally induced hazards he alone must bear while at the same time choosing to give him life in which to bear them, in which to suffer *our* chosen experiments, and to be the vehicle "progress" whatever the consequences.

When pressed, researchers in this field cannot deny that there may have to be not a few mishaps, not a few monstrosities discarded, more serious defects induced in place of the one sought to be prevented, before they can even get to know how to perfect the technology of germinal engineering. The last test done to detect induced damage may itself be injurious or may have to be omitted because it risks greater possible damage; the same for the last intrauterine screening or scanning, the last tap of the amniotic fluid.

The rejoinder that will be forthcoming is as follows. The incidence of probable risk of induced damage can be kept equal to or below the incidence of probable natural defect calculated from the genetic histories or tests of the would-be parents. Moreover, in the course of the necessary close attention to this life, the necessary testing and scanning of its development, a lot of other unsuspected defects or accidental damage (as, for example, from its mother's sleeping pills) may be discovered along the way. These too can be dealt with or their subject eliminated by genetic abortion. That is the rejoinder.

But the life we're talking about *would not have been,* and therefore would not have been subjected to those hazards, had he not first been produced by the choice of germinal engineering as our means of preventing of transmission of genetic defects. You cannot justify a questionable procedure by appeals that in thought assume it has already taken place. By no logic can this new sort of genesis be made to bottom on itself, or be justified by concomitant balancing of advantages that already presuppose the experiment (which was in question) that placed the child-to-be at risk of both induced and natural damage. The sperm and egg are in need of no physician; nor is there any child who has consented to be used at risk to cure his parents' need for a child.

It is therefore one thing for human ingenuity to find a way, even at great risk, to protect an unborn child or an infant from more serious risk by developing gene-change surgery or treatment. But it is quite another thing for human ingenuity to create, at the risk of procedurally induced damage, a human life thereafter to be monitored for those same damages.

The rejoinder I have posed to my argument, however, breaks down and analyzes the original proposal in a fine way. It shows us that the basic idea of genetic engineering or germinal manipulation turns human procreation into manufacture of our progeny, or rather replaces the transmission of life from life by the categories of manufactory (which of all human activities is most concerned with product design, and with doing anything at all to improve the product, or at least to seem to do so).

Therefore, the proposal to engineer sperm and ova or their precursor cells to prevent the transmission of serious genetic defects contains, in its rationale, and in principle, the use of biomedical technology to eliminate minor defects as well as serious ones; positive eugenics no less than negative; the introduction of a gene for blond hair, if desired, no less than genes for greater intelligence or musical ability; the delivery to people of a child with the wanted sex no less than producing from them a child without cystic fibrosis by manipulating their gametes; the production of a dwarf if I need one in the circus I own no

less than a potential Horowitz in the family; the mixture of chromosomes from other species with human ova and sperm cultures before they are brought together in the final product on the laboratory assembly line.

These are not just the fancies of authors of articles in popular magazines today – extrapolations to be denied by serious scientists. Joshua Lederberg of Stanford University begins by speculating on what would be "the effect of dosage of the human twenty-first chromosome on the development of the brain of the mouse or the gorilla"; he ends by contemplating "the introduction of genetic materials from other spheres" into the human. And Dr. R. G. Edwards – that "brave" pioneer in the manipulation of embryos at risk – asks whether medical ethics, having been stretched to warrant what he is doing in *in vitro* fertilization and embryo transplantation, can be further stretched to justify "the more remote techniques" for "modifying embryos," such as the productions of "chimeras" by adding to a human embryo the precursor cells for organs from other blastocysts, and perhaps from other species.

The speculation that most appeals to me is the idea that I might have been created with a contraption for photosynthesis on my back, so that like a plant I never had to eat. . . but still had a penchant for philosophy. In any case, the radical displacement of procreation by manufactory happens long before we begin to think of adding to future possible human beings organs and capacities not their own. That begins with the acceptance of genetic engineering as a project. With that, the fundamental moral argument for all subsequent steps would be completed, whether we take those steps or not or whether we judge them to be worth taking or not.

We must conclude that with genetic engineering by gametic manipulation we are already in the world of the Fertilizing Stations and Decanting Rooms of the East London Hatchery in Aldous Huxley's *Brave New World.* Huxley's vision of a pharmacological and genetic utopia, we should remember, was an entirely happy society. That means that, defendable step by defendable step, we shall all be happy on the way there. Otherwise Brave New World would not be the happy place its prescient author predicted it to be.

C. S. Lewis is another author, less famous perhaps, who shares with Aldous Huxley the prescience of having discerned, under the very shadow of Nazism, that genetics rather than the misuse of political power constitutes in our era the greatest danger of "the abolition of man." He wrote in the book of that title in 1942 that we should "not do to minerals or vegetables what modern science threatens to do to man himself." Lewis seemed to have discerned the last citadel from which technological applications are apt to be excluded or where we will discover limits we will agree to defend as we would defend our lives will prove to be the citadel of man's nature itself. While the leopard, the great whale, and the forests are to be protected in the ecological ethic of our day by restoring to mankind a proper sense of things, man as a natural being himself may be given no such protection. There are parameters of the cheetah's existence that ought not to be violated. . . but scarcely any we can think of of man's. Other species are to be protected in their natural habitat, in their natural functions, and in their natural courses of action, but man is doubtfully to be left like them.

There is a renewed sense of the sacredness of groves, and of the fact that air and streams should not be violated. At the same time there seems to be no abatement of the acceptance of the view that human parenthood can be taken apart and reassembled in Oxford, England; New York; or Washington, D.C. And of course, if we can disassemble and reassemble human procreation, it follows that thereafter human nature has to be wrought by Predestinators in the Decanting and Conditioning Rooms of the East London Hatchery or in commercial firms bearing the name "Genetic Laboratories, Inc." in all of our metropolitan centers. Significantly, that latter name was the one chosen for a commercial sperm bank recently opened in New York City, whose ostensible and entirely praiseworthy mission is simply to provide men with a backstop for voluntary vasectomy. Yet its founders called it *Genetic* Laboratories.

The reason this seems to me our future is that the agents of these vast changes are the authoritative figures in white coats. Defendable step by defendable step, they are deemed by the public to be not so much researchers or technicians but mainly members of the healing profession, those who care for us, who tend the human condition. That being so, before it is realized that the objective has ceased to be respect for the unborn patient and tending the garden of the human creation, it will be too late and Huxley will have been proved true.

Joshua Lederberg, speaking of how public policy may be determined in regard to clonal reproduction, ventured his opinion that how the public received would depend on "the accident of the first advertised examples. . . its batting average, or public esteem of the clonant; the handsomeness of the parahuman product. . . "

Perhaps I can conclude by expressing the paradoxical and macabre "hope" that the first example of the production of a child by the genetic engineering of its parents' gametes will prove to be a bad result and that it will be well advertised, not hidden from view. *I do not myself actually believe that the good to come from vast public revulsion in such an event would retroactively justify the impairment of that single child.* But then, for the same reasons, neither do I believe that germinal manipulation is a procedure that can possibly be morally justified, even if the result happened to be a Mahalia Jackson. ■

Probabilities and Practicalities

by Carl Djerassi

I have an advantage over the other speakers in this discussion of genetic engineering. I wear two hats — an academic one and an industrial one — and I can change these hats with considerable rapidity. I realize that this is sometimes disconcerting and unfair in discussions or arguments because at times a question will be asked of me from an academic viewpoint and I will reply to it with an industrial slant, or vice versa.

In my brief presentation I would like to give you a fourth view of the question of genetic engineering and, in particular, the possible involvement in this area by the scientific industrial community. In order to do so, we first need to define genetic engineering, at least from the industrial viewpoint. One convenient way of dividing the subject is to refer to it as *constructive* genetic engineering, meaning the improvement of progeny, and *preventive* genetic engineering, which would concentrate primarily on avoiding the birth of undesirable progeny.

Professionally I am not a geneticist, but I have spent a great deal of time, both in my own research work and in terms of policy decisions, on a subject that is fairly close to today's topic, namely the question of birth control. The moral, technical, and policy questions are rather similar to those posed by genetic engineering, and I would like to point out some of these similarities.

Abortion and Genetic Engineering

Preventive genetic engineering leads directly to the question of abortion, and this is an area of research in which a great deal of work is now going on in the pharmaceutical industry. I myself happen to be a strong believer in the importance of such research. I am firmly convinced of the great importance of abortion,[1] and I consider it a human right. I also recognize that this is a very controversial topic. Industry is involved in this field because of research on abortifacient agents — in other words, chemicals that will produce an abortion. If it is a very early one, then the question of abortion becomes almost semantic. Thus, do we consider expulsion of the fertilized egg after one or two days an abortion? If not, do we consider it after ten days, or twenty or thirty or eighty? In the Koran, for instance, life is supposed to start only around day eighty, because it is then that the fetus is supposed to acquire a soul. Therefore, under the limitations of the Muslim religion, elimination of the fertilized ovum during most of the first trimester of pregnancy (incidentally, by far the safest time from a clinical standpoint) would not be considered an improper abortion.

Professor Freund in his earlier talk raised the question of legal constraints and impositions in the field of genetic engineering, and I believe that he considered this especially in the context of potential human cloning. If we actually would reach that particular level of technical competence when human cloning is actually feasible, then I have personally great doubts about the efficacy and feasibility of effective legislative coercion in that field. Let me cite a fairly simple but not too well known example from the field of abortion to substantiate this view.

Abortion is in many respects the most widely practiced practical form of birth control. It is, of course, not preventive medical practice, but rather might be considered a cure for a "disease," if one actually considered an unwanted pregnancy to be a disease. In many countries, notably in eastern Europe since World War II, abortion is available free on demand. Furthermore, statistics from these countries are now fairly readily available, and they indicate that in several instances the number of abortions greatly exceeds the number of births. This appears to be also true in a number of western European countries, notably the predominantly Catholic nations such as France, Belgium, Austria, and Italy, where the number of illegal abortions apparently also exceeds or at least equals the

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DR. CARL DJERASSI reflects the viewpoint of social impact of the advances in medical science. His entire career has involved research since he became a research chemist for Ciba Pharmaceutical Products in 1942. In 1949, he joined Syntex Corp. as associate director of research and in 1968 he was elected its president. Since 1952, he has served concurrently as a professor of chemistry, first at Wayne State University and since 1959 at Stanford University. Dr. Djerassi's specialty field is steroid chemistry which is intimately involved in the study of human biological processes. He has published a great number of technical papers and several books. He serves on the editorial boards of five scientific journals.

number of births. Indeed, it is very likely that in the entire world somewhere on the order of forty million abortions occur in any one year, which would mean that nearly 8 per cent of all women of reproductive age undergo an abortion in any one year. From these staggering statistics one can conclude that even very oppressive legislation is unsuccessful in stopping a practice in the field of birth control when the motivation exists to use it.

Rumania happens to be the country in which, until fairly recently, the number of abortions per capita was higher than that in any other country and in the middle 1960s reached a level of approximately four abortions per live birth. As a result, the birth rate in Rumania dropped to the second lowest level in Europe. The Rumanian government became concerned with the situation and, in the fall of 1967, suddenly passed a very drastic anti-abortion law under which legal abortion in Rumania became almost as difficult as that in any other European country. As a result, within one year the birth rate in Rumania more than doubled, which is a spectacular increase and would tend to support Professor Freund's fear that issues dealing with birth (quantitatively, i.e., birth control; and qualitatively, i.e., genetic engineering) can be legislated and manipulated.

However, within two years of the initial passage of the strict anti-abortion law, the Rumanian birth rate had again dropped very strikingly and started to approach its original level, because it apparently took the Rumanian population only about that long to adjust to the changed circumstances and to switch over predominantly to illegal abortions. The technical facilities for such abortions were, of course, available, and it was simply necessary to set up the original system in an illegal manner. While I am not aware whether precise data are actually available, I would suspect that the only consequence of the shift was probably an increase in the maternal death rate, an effect which the government hardly wanted to stimulate. The point that I am trying to make, and which is equally applicable to abortion and to genetic engineering, is that when we talk about such basic issues as procreation we are dealing with individual decisions, and there really are no legislative and legal mechanisms for changing them in a fundamental manner. Education, public relations, religion, or appeals to chauvinistic and nationalistic motives are much more effective means of manipulating the quantitative and qualitative issues of birth.

Industrial Considerations

Let me now indicate how industry would consider the question of whether it should get involved to any major extent in the field of genetic engineering. From a purely pragmatic viewpoint, the industrial manager would first carry out an R.O.I. (return on investment) calculation. The factors that would be taken into consideration would be, for instance, the potential market (which in this case is essentially unknown), the development costs (which in this instance would be horrendous), the development time (which I think would be fantastically long), and, finally, the method of distribution (which probably would be highly restricted). Adding up all these factors, one would reach the almost inevitable conclusion that one cannot make a real case for any industrial organization getting involved in "constructive" genetic engineering unless that particular company is purely interested in doing basic research in genetics. However, to convert these research findings in the genetics laboratory into widely applicable agents for final human use would be prohibitively expensive and lengthy, and probably even unfeasible. It is for this reason that I believe that industry is very unlikely to get involved in this area.

Government Regulations

There is a second factor which industry would obviously take into consideration and that is the question of the role that government regulatory agencies play in this field. I am rather surprised that Professor Freund did not address himself to this topic because he would obviously be more competent to do so than any of the other speakers at this symposium. I would say that this aspect raises another very significant barrier to research in this field, and here again there is a considerable amount of similarity to the present situation in the birth-control field, which I have actually covered in two articles which appeared fairly recently in *Science*.[2,3] Thus, while there is more and more concern worldwide about the so-called human population explosion and about the desirability of carrying out more research in the area of reproductive biology and physiology, especially as it applies to birth control, in actual fact *less work* is being done currently insofar as practical applications are concerned. This is not something which one realizes if one reads ordinary newspapers or even most scientific journals. More and more money is apparently being spent in this field, but less and less practical work is actually being done and fewer results achieved from such endeavors. Most of the interesting advances are actually effected in the laboratory on experimental animals and less and less exciting new work is being carried out with humans because of the tremendously increased restrictions regarding human experimentation. I am not passing any value judgment on these restrictions other than to point out that they exist and that it would be pointless to ignore them.

Let me offer a quotation from an article which came out recently in *Science*, entitled "Gene Therapy for Human Genetic Disease."[4] The authors were dealing with the way-out genetic engineering that everyone is afraid about, notably about chemical treatment through modified DNA's. In the article the authors make what apparently seemed to them a new observation: "If synthetic DNA molecules are to be used, then we visualize the Food and Drug Administration or some similar organization enforcing quality standards for DNA preparations used in gene therapy." Note that the authors use the word "visualize." This seems to ignore the fact that it is not a question of "visualizing"; enforcing quality standards for DNA preparations is already the current duty and function of the FDA. In this particular instance we are dealing with genetic treatment through chemical agents, and DNA is just another chemical. There is no question whatsoever that any researcher in this field, if he wanted to work on human

applications, would have to follow already existing FDA regulations, which he would find very restrictive.

The same authors indicate that, in their opinion, one should first carry out extensive studies on animals to evaluate the potential therapeutic benefits. These tests should include long-term studies of the possible induction of cancer and genetic disturbances in experimental animals, and that this would require the development of animal models for human genetic diseases, etc. Apparently the authors of that article[4] again overlooked the fact that this is exactly what already needs to be done now in areas of medicine that are much simpler than genetic engineering. In fact, according to the relatively new legislative mandates of the FDA, that agency has to approve for all practical purposes all protocols for new clinical research upon humans. In other words, if the experimenter wishes to treat his patient with any chemical, and DNA is a chemical, he first will have to get permission from the FDA to do so. In my opinion, it is exceedingly unlikely that any employee of that agency would in fact have the courage to permit any of these experiments to be carried out at this time. He would not necessarily have to forbid them, but he could procrastinate in a manner which would make such experimentation legally impossible. In my opinion, investigators, whether they are academic or industrial ones, should not ignore this reality.

There is an apparent loophole to this control of a government regulatory agency and of the impact of legal restraints on research. Specifically, it is an area where human experimentation is easily possible and where experiments are sometimes carried out without applying all of the ethical and moral considerations that might be exerted. I speak of surgical interventions because, in the absence of drugs, regulatory agencies cannot, at this stage, enter. Thus, if one concerns oneself with questions of tissue transplantation, one does not require any government approval, or indeed any outside approval. The surgeon, if he so wishes, can decide, essentially on his won within the confines of the regulations that exist in his own hospital or institution, to perform such experiments. This, or course, is what has happened in the case of heart transplants. However, since almost any form of genetic engineering that one could conceive of at this stage will not be purely surgical but will involve, in one way or another, chemical manipulation, I believe that the tremendous barrier of externally imposed restraints by government regulatory agency should not be ignored and that this will probably be the most secure insurance that little, if any, of this research will actually be performed.

Prospects for the Future

Until now I have essentially covered only negative factors and you might ask whether there are any positive ones. Could industry conceivably get involved in the area of genetic engineering and, if so, could one really reach some goals in the foreseeable future? For the purposes of this talk, "foreseeable future" might be considered the time when the grandchildren of the class of 1972 are living.

I am convinced that genetic engineering will be used relatively soon in the veterinary field, and Professor Danielli

has already addressed himself to this topic. Moral restraints do not enter here, and neither do practical restraints. In this instance economic considerations are probably overriding, and progress in the field is such that marked advances can be anticipated.

What about applications of "preventive" genetic engineering in humans? Surely there are some areas where a consensus on the part of scientists, lawyers, and theologians can easily be reached; for instance, few of them will probably argue the point that the prevention of mongolism in babies is a desirable goal. In order to achieve it, advances in diagnosis at an early stage are crucially important. Technically it is possible to aspirate amniotic fluid and to analyze it. If one developed accurate diagnostic procedures, preferably automated ones, it would provide us with information on a wide variety of potentially deleterious genetic diseases, and it would then be possible to inform the pregnant mother of that fact and leave up to her the decision whether she wants to terminate pregnancy through an abortion. This, incidentally, is the reason why abortion is so intimately linked with genetic engineering.

In fact, Professor Ramsey in his book *Artificial Man* makes the explicit statement that people do not have the God-given right to have children and that he is prepared to give society and governments the decision-making power as to who should and should not have them under certain conditions. I would only go one slight step further and state that a woman who happens to be pregnant and is informed unambiguously that her child will be a mongoloid should have the option to decide by herself whether she wants to give birth to such a child. If you agree with that position, then you have already agreed with the principle that it is the prospective mother that should make the decision whether she wishes to have a child or not and, consequently, that the decision on abortion should be hers.

This brings us finally to the spectre of human cloning, and I really feel that it is only a spectre. It is a topic that lends itself to sensational magazine articles, but the chance of this really happening in a human being is enormously far away. Professor Ramsey alluded to my colleague, Professor Joshua Lederberg of the Stanford Genetics Department, who has written extensively on this subject. While Lederberg certainly does not exclude the theoretical feasibility of this being demonstrated in higher animals, I believe that he is quitc convinced that the lead times are much longer than most people are prepared to accept. I believe that no one working in this particular aspect of human engineering, namely human cloning, has ever tried to construct a critical path map. This is something that academic scientists are not accustomed to do, whereas industrial scientists find this an important intellectual discipline. Let me again cite an example from the birth control field.

Two years ago in a paper in *Science*[3] I considered what it would take to develop an ideal birth control agent, such as a once-a-month pill for women which would be a menses inducer. A woman would take such a pill once a month, and this would induce menstruation; if she had gotten pregnant during the preceding month, the pill would initiate what we might call a microabortion, because she would in fact have been pregnant for a couple of weeks. When I constructed a critical path map for such a hypothetical agent, I reached the conclusion that the lead times involved would be such that such an agent could not be developed until the mid-1980's at the earliest. This paper[3] actually generated more attention than any of the hundreds of other scientific articles that I have written, and I believe that in part this was due to the fact that I called attention to the stark realities of time and money costs involved in developing such complicated approaches for human application. It is a topic that academic and government scientists, as well as legislators and especially the press, like to ignore. If such a critical path map is prepared for developments in human cloning, then it will become perfectly obvious that we are talking about a development that, even if it got major scientific and governmental support, could not be developed until somewhere in the next century.

The statement is sometimes made that these are only technical problems in the sense that the fundamental scientific questions associated with cloning have already been solved, and that all that is required is a technological effort to apply these solutions to humans. Here again, my colleague Joshua Lederberg presents a very good answer to this simplistic view. He stated in so many words that, while we have the technical knowledge to build bridges, it does not follow that we are able to build a bridge from San Francisco to Honolulu. I would extend Lederberg's bridge-building analogy to cloning by stating that this is not evcn equivalent to building a bridge from San Francisco to Honolulu but rather from San Francisco to Sydney, or perhaps even across the Indian Ocean. I rather doubt that the chances of building such a bridge soon are very good, even for the highly competent engineers that graduate from Worcester Polytechnic Institute. ■

[1]C. Djerassi, "Fertility Control through Abortion — An Assessment of the Period 1950-1980," *Bull. Atomic Scientists, 28* (No. 1), 9 (1972).
[2]C. Djerassi, "Prognosis for the Development of New Clinical Birth Control Agents," *Science, 166*, 468 (1969)
[3]C. Djerassi, "Birth Control after 1984," *Science, 169*, 941 (1970).
[4]T. Friedmann and R. Roblin, "Gene Therapy for Human Genetic Disease," *Science, 175*, 949 (1972).

Genetic Engineering

Interplay

Questions and Panel Discussion

How does a clone differ from ordinary tissue culture? What makes cells clone?

DR. DANIELLI. In a clone, the genetic composition of all the cells is the same, whereas in ordinary tissue culture, there is a good deal of variation. due to accidents on the way before the stuff gets into tissue culture. The tissue culture in a clone, in other words, is a slightly refined ordinary culture.

Who decides on value systems in the future? Is anything being done on a reasonable scale in legal or political schools to address the question of who will answer these critical questions and how?

DR. FREUND. Well, there certainly is growing interest in the ethics of scientific advance. In medical schools, and I dare say even engineering schools, certainly in law schools, there is growing interest in professional ethics in a basic sense. I don't know how you arrive at these things. There is a kind of Alphonse-Gaston game, with the scientists and society waiting for the lawyers and judges and administrators to prescribe the ground rules, while the lawyers and judges and administrators are waiting for a consensus to develop in society.

I think that healthy development would be to try to arrive at a consensus, and that is why I think that even though advances like cloning may be fifty years distant, in the age of grandchildren rather than children of those present, that is not too long a time in which to consider these problems. Symposia like this are a modest beginning, but we need more systematic effort. I would hope that professional associations would do it in a more symptomatic way.

As you know, there are institutes now that do issue publications and do research. The Institute of Medicine was set up by the National Academy of Sciences. The Institute for Life Sciences in Hastings, New York, is doing important and interesting work both in research and in publication.

What we need is more such centers and more such intermingling of the disciplines.

The behavioral sciences are developing ways of exercising control over the individual by capitalizing on characteristics which may not always be controlled by the individual himself. Do you agree with this, and how do you categorize such research as compared to that of chemical alteration of the individual?

DR. RAMSEY. I think I have no real competence to answer that question. It is in the general department of the fact that there seems to me to be a difference of kind, not only a difference of degree, into which we are moving not only in the genetic alteration of the future of the race on certain suppositions, but pharmacological alteration or other kinds of alteration of human cells.

It is certainly arguable that every environmental change we have made in history has had a returning impact upon the genetic composition of the individual and the population. In other words, we have been altering ourselves all down through human history, but throughout most of this time we have had kickback. We could stick our tongue out at it.

The measure in which, I think, this now places in man's hands the ability to impose chronological and genetic control does not leave room for that reciprocity of freedom and destiny which has been a part of the human story to this point.

I may have misunderstood the question. In any case, I probably don't know the answer to it.

Are you hopeful as to the future of man? Would you care to comment on gene changes you expect?

DR. DANIELLI. I am caught as ever between my optimistic temperament and my judgment. It seems to me that human beings have managed to wriggle out of a great many tight corners in the past; it is reasonable to hope that they will do so in the future.

However, I think it may be necessary for us to have a drastic reorganization of our society, as occurred, shall we say, when the transition from food-gathering to agriculture took place, which after all is one of the most profound changes that mankind encountered.

In other words, what may be necessary to look with optimism on the long-term future of man is that a consensus will need to be established between the different cultures which we have existing in the world at the present time. We will have to agree, first of all, that the differences which exist between ourselves and other cultural groups of the world are trivial compared with the problems with which we shall be confronted in the future, and that we should be willing to lay aside our differences and try to work out some appropriate way through these certainly immense problems with which we are clearly going to be confronted in the next hundred years.

I can't say when one looks at the world right at this moment that one would be enthusiastic about the prospects. But after all, there are changes of heart that take place, and I may pull Dr. Ramsey's leg a little — it's only a hundred years ago that evolution was not respectable as far as the Church was concerned. Only a hundred years ago, and I am not pulling anyone's leg, very few people went to school. Many extraordinary changes take place without our having realized what happened, and I think it may well be that some are beginning to take place now which are as essential or more essential than those that have taken place in the past.

Therefore, let me say one should not base one's hopes entirely upon what is clearly predictable. It is a good thing to be hopeful.

It appears to me that the average quality of the human genetic pool is decreasing because modern technology is damping natural selection. Please comment.

DR. HOAGLAND. In a sense this is so, because it is medical procedures and medical therapy which are preserving the lives of people who in earlier times would have died because of the illnesses they happened to have. Take diabetes. The diabetic was fated not to live to reproduction very often before 1922 and the advent of insulin. With the advent of insulin and its use, the diabetic can live pretty much as long as anyone else.

Diabetes mellitus is a disease with a strong genetic comport, and of course diabetics who then proceed to have children who are also diabetics are increasing the number of genes for diabetes in the human gene pool by the fact that they reproduce, which they didn't before to anything like the same degree. A great many genetic diseases belong in this category, where medicine is making people live longer to be able to reproduce, which they didn't before.

This is all part of a humane approach to these problems, and yet the gene pool is certainly deteriorating under the increased number of defective genes that are being carried on as recessive or even dominant genes.

J. H. Mueller was one of the people most concerned about this problem. He calculated that it would be a considerable number of generations before this disastrous occurrence would be clearly in evidence, but he did predict the time would come when most of the occupation of human beings would be developing prosthetic devices for each other as a result of accumulating genetic defects which will pile up over a period of many generations. So there is deterioration, as a result of our basic humanity, of the very things that we think are important, namely to save lives and to prevent suffering, and this is certainly having some impact on our gene pool.

DR. DJERASSI. I think there's an oversimplification both in the question and the answer that Dr. Hoagland gave. That is, of course, true as far as it goes, but there are, as you pointed out, many diseases — diabetes being a very good example — where, by keeping diabetics alive, they are creative and otherwise exceedingly productive human beings, and the contribution that one diabetic can make to the future of the world can be enormous compared to the harm that he will do by perpetuating that undesirable gene.

To give you an example, suppose Einstein had been diabetic? There is no question whatsoever he would have died before he could have done what he did. If Mozart had been a diabetic, what then? I think it is unreasonable therefore to simply say that the genetic pool, using it in that context, is getting worse. In certain respects, it is improving the quality of life. This is where I think I would use preventive genetic engineering as a very important concept and define very carefully which particularly undesirable features I as a policy-making scientist or physician would be concerned about.

What is the value of considering whether or not genetic engineering is morally right when it is inevitable? Perhaps the more important question is, how can or should man adapt to this science?

DR. RAMSEY. The question asks what is the value of considering whether anything is right when it is inevitable. The questioner assumes that one can derive, I think, the right or the value of human reflection from a description of what is inevitable — a description of fact.

I myself, as a man who attempts to be reflective upon the human behavior — that's the definition of an ethicist, which means each of you is an ethicist if you would only let yourself go and be one — I would have to say that one cannot think reflectively about the right and wrong of human behavior if one proceeds to derive from what is hoped to be from what is inevitable or will be. Neither can one derive what will be from what "ought to be."

So a provisional answer to that for myself would simply have to be that it seems to me that the human being at all above the level of the beasts of the field would want to be able to say, if he is the last man around, the last dying being of this universe, if it came about by some wrong human action, some holocaust, some heinous immorality, he would have to have stature enough to say, though he knew it was inevitable because he stood there — he would want to be able to say that it came about by something that was wrong, as against simply a program of adjusting to the inevitable course of events.

Given Western civilization's peculiar attitudes towards non-Caucasoids, isn't it conceivable that there could be a systematic plan to mount a campaign of ethnic genocide?

DR. DANIELLI. Well, how good is the evidence that the attitudes of Caucasoids toward other racial groups is different from that of any of the racial groups to all other racial groups? There is very little difference between us except in the means we have of expressing our dislike of one another.

Elimination of one group is not going to solve any problems.

DR. HOAGLAND. For my part, I cannot conceive of any such thing.

DR. DJERASSI. I will give you my conclusions, for slightly different reasons. If some person really wanted to do this, he would only be able to accomplish this, even assuming all the political powers he would have to do it, within the very narrow confines of possibly a fraction of one country.

It is simply not logistical or feasible to carry this out worldwide, because a vast majority of the population, of course, is not Caucasian. Unless he blew up literally four-fifths of the world, he could not do this.

We have to remember that nearly one-third of the world is Chinese, and if you just add another third — just India and a few other surrounding countries — there is more than half of the world's population, in Asia, which is not Caucasian. So it is totally unfeasible.

If it is addressed in the context that a Californian would like to reduce the number of Chicanos, or the people in Manhattan would like to have fewer Puerto Ricans or blacks, that is theoretically feasible, but I think even in this day and age rather difficult to accomplish. And it is obviously undesirable to really accomplish.

In a given socio-political system, will those same groups who make political decisions also make genetic decisions?

DR. FREUND. This really breaks down into a formal answer and a somewhat more sophisticated answer.

Formally, the question would be, "Will the legislators and courts make the decisions about genetic engineering as they do about, shall we say, vaccination or quarantine?" I suppose in the end that will be so. However, remember that

it is one function of public lawmaking to decide what sectors shall be left to private choice.

In other words, it is a tricky question because it is the legislature that decides, for example, whether there shall or shall not be any law on abortion. But in a still more sophisticated sense, the legislators are going to reflect the consensus of their constituents, and that is a difficult question to answer.

My suggestion was that the more broadly affected the population is by any proposals, the better inherent check we have on a decision-making process. Just as one argument against a volunteer army is that we might be readier to go to war if the sons of most families were not subject to be called.

In other words, there isn't a real consensus if a measure is adopted that burdens a very small and special class which has relatively little political weight.

So that all I can say is that I think, though informed decisions will be made by the conventional decision-making organs, that more realistically these will depend on what consensus develops in society, and that in turn may be affected by how widely shared any programs of genetic engineering are, how many families would be affected.

That seems to me an important factor in assessing the reality of a consensus.

DR. RAMSEY. Don't you think, Dr. Danielli, about the real question behind that research you are doing on discovering the nature of the aging process? You have very charming notions as to what usage we would make of that — the value to the individual is that we would all function at a high level and suddenly we will go to pieces like the one-horse shay; the value to the society is that it would deal with the problem of health care.

Doctor, don't you really think there is a problem as to what the politicians and the power brokers are going to do with the knowledge of how to master the aging process?

I think they are going to want to live a long time. They're not going to take the solution you propose.

What of the abuses that stand close to the elbow of the scientist? The question that is really in the minds of the audience in some of these questions concerns the political processes by which one is going to even imagine how we could do anything other than make ourselves worse off by learning to master the aging process in terms of the actual

use that would be made by the people with decision-making power — or all of us, and our natural desires.

That seems to me to be an issue that may be different between you and me temperamentally, me being rather gloomy and you being rather more hopeful. But really, the question is, how does one, without stopping theoretical advance of knowledge, move a society into the actual social applications? We can all think of desirable applications; we can also think of probably many more probably undesirable applications.

DR. DANIELLI. I think there is little doubt, and it is by no means certain that we can do this, but if we do learn to adjust the rate of aging of individual organ systems and so forth, we may improve general health without necessarily changing the life span of man, which is a different thing altogether, irrespective of what the politicos might wish or might do that would be an advantage.

On the other hand, if for our future we are dependent upon the type of governmental process and the type of relationship between different communities on a worldwide basis which we see going on now, I think any sensible human would necessarily despair. It is quite obvious that the priorities are quite wrong in terms of the problems that confront us. For example, I suppose that on what is sometimes called "defense" we probably spend about two thousand billion dollars a year.

Now, most of this expenditure, in fact, is self-defeating in that everybody does the same thing within their means, and the hope is that we end up in a stalemate.

If the same resources were devoted to more serious problems, I think one would feel more hopeful about it, but quite clearly a change of heart is necessary before that sort of transformation takes place, and that is basically why I say that most of the major problems which confront us in the future are not likely to be solved unless there is a new ordering of society.

DR. DJERASSI. I think this is a very important question, and we have had significant comments on it. I would like to address myself to it from a different viewpoint.

There is really a negative feedback group in this which makes it fairly unlikely that this is going to happen very soon, for the following reasons.

When you consider the narrow question of aging and deterioration, which certainly is perhaps the most difficult one in medicine, very few advances have been made on a practical basis, and there are really not any just on the horizon soon in terms of practicable applicability.

Let's take as an example multiple sclerosis, which certainly is one of the most common killers of men, particularly males. If we would like to do something about this in terms of preventing, let's say, a deposition of cholesterol in the arteries in middle age and later on, we really ought to do something around age eighteen or nineteen, when the process starts. Theoretically we can indicate that if we give something to young men around that age, and they keep on taking that particular preventative, then it is likely that the incidence of multiple sclerosis at the age of fifty, sixty, or so on, would greatly decrease, and that would certainly have an impact on longevity — and on a lot of other things as well.

However, to carry out this particular experiment — even if we in fact found a suitable animal model — we would have to carry out these experiments for twenty, thirty, or forty years, in order to evaluate them statistically. I think you yourselves know that there are objections to this, even in the area of contraceptives, oral contraceptives in women.

A statement was made, quite validly, incidentally, as to what happened to a woman who was given something for twenty years? The only answer is that you are going to have to carry out the experiment for twenty years, and if you don't want to then you can never know with absolute assurance.

That boils down to the risk/benefit evaluation, which we are exceedingly poorly equipped to handle. This applies to politicians, it applies to I think even scientists, and I think this is the very, very serious restraining factor that extends at an astronomical rate the lead time between laboratory discoveries and the practical applications, and therefore social applications. ■

Reunion Roundup

Constitution and By-Laws Changes Approved

At the Annual Meeting of the WPI Alumni Association, called to order at the Reunion Day luncheon on Saturday, June 10, 1972 by Association President Irving James Donahue, Jr., '44, the proposed changes to the Constitution and By-laws of the Association were approved unanimously. Committee reports and reports of the officers were waived at the suggestion of the chairman, as Mr. Donahue noted these were all on file with the minutes of the May, 1972 Alumni Council meeting.

The vote marked the culmination of many months of hard work which began in 1969. At that time a master plan committee was appointed by Association President Robert E. Higgs, '40 and the committee was chaired by Professor Malcolm S. Burton, '40. Their report recommended that the activities of the Alumni Association be tied in much more closely with the operations of the College itself since a stated objective of the Association was to work for the betterment of WPI. Following this, Higgs appointed a Reorganization Committee of eight alumni to study the recommendations of the Master Plan Committee and to recommend a course of action. This committee was presided over by Vice-President of the Association, Bradley E. Hosmer, '61.

The Reorganization Committee recommended in its report that basically the Alumni Association should continue as a policy-making body in the area of alumni affairs at the college, but that the day-to-day operations of the Association should come under the direct guidance of the college administration. It recommended nine points of reorganization and those nine points were approved by the Alumni Council and the Association in June of 1970 for the Association to operate on a one year trial basis under the reorganized set-up during the 1970-71 year.

During the 1970-71 year, Mr. Higgs asked Mr. Hosmer to chair a three member committee to develop a proposal for revision to the Constitution and By-laws of the Association which would incorporate the nine points of reorganization. This committee did develop a detailed proposal, but in June of 1971 the Council decided to ask the Association to extend the trial period of operation for another year, rather than to vote on the proposal, so that it could be studied and developed more fully. The Association did grant this extension at its Annual meeting in June of 1971.

At a specially-called meeting in October, 1971, the Alumni Council devoted an entire Saturday to the revision and refinement of the proposal of the Hosmer committee. In the end a final proposal was developed and at the February, 1972 meeting of the Council it was approved unanimously. The Council-approved proposal was then mailed to all alumni of record on April 19, 1972 and the vote of the Association on June 10, 1972 approved the proposal unanimously.

In commenting on the vote, President Donahue said, "We feel extremely confident that the changes voted, which are primarily in operating procedures, will have a very positive effect on improving the efficiency and effectiveness of the alumni program at WPI. I am most pleased by the overwhelmingly affirmative vote given by the Association to the changes and I'm confident that we have taken a major step in the right direction. It has been most gratifying to see committee members and the Council work so conscientiously on this important topic and I'd like to thank each and every one of them for their help and dedication."

CLASS OF 1912

We had 14 at our sixtieth reunion, Friday, June 9, 1972. Included were Joseph and Helen Granger, Frank and Beulah McGowan, Henry and Madeline Rickett, Holman and Katherine Waring, Eugene and Gertrude Powers, Marjorie Nickerson, Howard King, Edward Tucker, and Harrison Brown. The Ricketts hold the record for attending all reunions in ten years.

As usual, we had dinner at the Marlboro Country Club and the meeting at the home of our President, Joe Granger.

There was only one death during the year, Bertram Cleveland on May 16. Our membership is now 28.

Over $3200 interest is available in the Herbert Foster Taylor Student Aid Fund.

It was decided to hold reunions every year as long as there are any who want to come.

1912

1917

Officers elected for the next five years: President, Joseph Granger; Vice President, Henry Rickett; Secretary-Treasurer, Harrison Brown.

Questionnaires sent out again this year showed that, in general, our members are continuing the activities previously reported. The number of descendants reported added to 31 children, 78 grandchildren, and 32 great-grandchildren. If you add to these the living offspring of classmates who have gone along, what a nucleus we have for improving the standards of our country!

Jim Shea is home from a month in the hospital and is recovering slowly. He has difficulty in walking. An interesting letter from John Beck in Florida shows he is still very active. Albert Humphrey is in a nursing home in Middleboro but is able to get around. Ernest (Nibs) Taylor writes us long letters twice a year.

Word was received of the death of Mrs. James (May) Cunningham, widow of the former Tech trustee. She had written several times in previous years that she and Jim were intensely interested in Tech.

Harrison G. Brown
Secretary

1922

CLASS OF 1917

The class of 1917 met for its 55th reunion, Friday night, June 9th, at the Worcester Club. A social hour followed by a nice dinner were enjoyed by all. During the evening we were pleasantly surprised by a visit from President and Mrs. Hazzard and Alumni Secretary, Stephen Hebert.

Those present at the dinner were: Mr. and Mrs. Wentworth Doolittle; Alfred W. Francis; Mr. and Mrs. William H. Green; Mr. and Mrs. Roland E. Greene; Mr. and Mrs. Robert C. Hanckel; Charles E. Heywood and daughter; Clyde T. Hubbard; Mr. and Mrs. Richard D. Lambert; Major General Kirke B. Lawton, USA, ret.; Ralph Merritt; Warren Parks and son, Russell, '41; Glendon M. Pomeroy; Mr. and Mrs. Henry W. Sheldrick; Mr. and Mrs. Russell H. Smith; Mr. and Mrs. Samuel Thompson; Mr. and Mrs. Max Tucker; and Mr. and Mrs. Allen D. Wassall.

Greetings were read from the members of the class who were not able to attend.

Saturday, most of the class attended the alumni lunch and meeting which was held in Morgan Hall.

Russell H. Smith

CLASS OF 1922

Several fortunate circumstances combined to make the 50th reunion of the Class of 1922 the best ever held by our class, if not the best ever held, period. First was the Institute's decision to separate commencement and reunion weekends; second was the valuable assistance rendered by Steve Hebert in the conception and execution of the program; third was the Institute's cooperation in making their facilities available to us; and last was the enthusiastic response of the members of the class.

The reunion stretched over three days, and had for its base of operations the Yankee Drummer Inn and Motor House in Auburn. Many of us arrived there in time for lunch on Thursday, June 8th, and spent the afternoon setting up headquarters, distributing costume hats and name tags, playing bridge and golf, renewing friendships, and greeting later arrivals.

By the time we had travelled by bus (furnished by WPI) to join the Worcester-based members of our group at 1 Drury Lane, our delegation numbered 30 classmates and 25 wives. It was a gala reception and cocktail party, hosted by George and Jean Hazzard, both qualified candidates for Doctor of Hospitality degrees. Then back to the bus for a five minute ride in the rain to Higgins House for a sumptuous repast amidst most unusual surroundings. After the meal, President Hazzard gave the class advance notice of the Ellsworth Foundation gift, which was followed by a guided tour through the mansion led by Mrs. Hazzard. Our faithful bus returned us to the Yankee Drummer, and everyone turned in early.

Friday's formal activities began with another bus ride to Worcester for a deluxe buffet lunch at Morgan Hall, followed by seminars for the studious on the WPI plan, admissions and placements, and a tour of the Worcester Art Museum for the artistic. Our official reunion banquet was held at the Yankee Drummer at 7 P.M., for which we mustered 47 classmates and 35 wives, as follows: With wives: Abbe, Aldrich, Barrington, Batten, Bennett, Bingham, Brigham, Brusnicki, Carl Carlson, Clarkson, Colesworthy, Cooney, Russ Cushing, Ellsworth, Dick Field, Russ Field, Heffernan, Holden, Bill Howe, Hurowitz, Keith, Marston, Meyer, Page, Parsons, Pickwick, Richardson, Russell, Sholz, Townsend, Turner, Watchorn, White, Whitney, and Wightman. Without: Alden, Hadden, Herr, Larson, Lloyd, Mason, Murphy, Parker, Schiller, Snow, Thayer, and Williams. In addition, Dick Williamson dropped in to say "Hello", and Harold Rice with his wife joined us at Worcester on Saturday. Howard Carlson, Red Hyde, and George Walker had planned to be present, but due to unforeseen circumstances were forced to cancel.

Preceding the banquet class pictures were taken; after the meal, with Pres. Keith as toastmaster, Eddie Sholz gave statistics on our 50-year gift to WPI, and Dean Grogan, our guest of the evening with Mrs. Grogan, spoke briefly. The affair concluded with that perennial feature: movies of past reunions.

Saturday at Worcester, after our induction into the 50-year Associates, we assembled with all other reunion classes at the general alumni luncheon in Morgan Hall, during which we received our 50-year diplomas, and won the attendance award. Pres. Keith received the Herbert F. Taylor Award for Outstanding Service to WPI, and later delivered the class message for the Class of 1922.

The final reunion event took place at the top of Institute Road, where a groundbreaking ceremony was held, symbolizing the start of construction of the Ellsworth Residence, made possible by a gift of $250,000 from the Ruth and Warren Ellsworth Foundation. Ground was actually broken, by our classmate, Warren, at the controls of a bulldozer.

Philip H. White, Secretary

CLASS OF 1927

From a prearranged meeting at Alden Memorial on Friday, June 9th, about half of those attending our 45th reunion visited

1927

1932

the newer buildings on campus. Guided by a senior student, the touring members were shown these fine facilities, which for most were being seen for the first time.

Returning to Alden they joined the later arrivals in the Music Room, where a Happy Hour was shortly in full sway with 24 members and 15 wives. The fun of trying to remember faces was made more confusing by being provided with a dinner menu on which was a list of names and the caption "How many do you identify?"

From this all too brief and pleasant gathering, we crossed the hall to the Janet Earle Room to enjoy a delicious roast beef dinner.

That the "Admiral" was there, smiling upon us from his painting, seemed most appropriate. Captain Earle came to Tech while we were students. As our '27 yearbook so well stated, "this man of action left his mark of achievement on the life of this college." Started during our last year, the building of Sanford Riley Hall was the forerunner of the expansion program we so greatly admire today.

With class officers absent, no formal meeting was attempted. Cliff Fahlstrom, co-planner with Phil MacArdle of the 45th reunion, did an excellent job as Master of Ceremonies. It was reported that of the 87 members listed in the last Alumni register, there are today only 76 active members. The ranks have been reduced by 7 deaths and 4 whose addresses are unknown or inactive. In making our plans, we made contact with 80 percent of our members, 36 of whom couldn't make it because of remote distances, conflicting engagements, or ill health. Cliff then asked for a moment of silence in respect for those who can never again be with us, with particular reference to James Rogers and Ellsworth Carpenter, whom we lost during the planning of our 45th.

Of those who wrote advising of their inability to attend, their letters and comments were read at the dinner. We missed them all, but were happy to hear that God willing most of them planned to be with us for the 50th.

Cliff called the roll of those present and each responded with a short sketch of his activities, numbers of children and grandchildren, etc.

Twenty-two of those from our Friday festivities, plus three that joined us on Saturday morning, attended the Alumni luncheon in Morgan Hall. The results of this reunion can best be summed up in a quotation from Vic Hill's letter just received. It reads as follows:

> "A member of the 1927 class can hardly return to WPI without being greatly impressed by the fantastic expansion of facilities on the campus; we can be proud of our Alma Mater. A great debt of gratitude is due those who, over the years, have built WPI to its present status. I have the greatest respect for Pres. Hazzard and think he is doing a wonderful job."

Those attending included: Mr. and Mrs. Richard E. Bliven; Mr. and Mrs. Edward F. Cahalen; C. Sture Carlson; Mr. and Mrs. Buell S. Dickinson; Mr. and Mrs. Herbert P. Dobie; Clifford I. Fahlstrom; Cecil R. Furminger; Albert M. Goodnow; Mr. and Mrs. Victor E. Hill; Mr. and Mrs. E. Carl Hoglund; Mr. and Mrs. Philip A. MacArdle; E. I. Merrill; Mr. and Mrs. Robert L. Parker; Mr. and Mrs. Nelson E. Parmelee; Frederick C. Pomeroy; William M. Rauha; Mr. and Mrs. Carl H. Schwind; Dr. and Mrs. Donald S. Searle; James M. Simmons; Mr. and Mrs. Nathan M. Southwick; Mr. and Mrs. Howard F. Stephenson; Thomas A. Steward; Mr. and Mrs. Emmett A. Thrower; Mr. and Mrs. Bernard J. Wahlin; Mr. and Mrs. Arthur Manning; and Frank E. Buxton, '28, who arrived on Saturday.

Philip A. MacArdle, Co-chairman

CLASS OF 1932

To celebrate our 40 years out of Tech, the Class of '32 returned to the hill on June 9. During the afternoon classmates and their wives began arriving, some to renew old friendships on the golf course, some to attend the informational activities at Gordon Library, and others to view exhibits at the Worcester Art Museum.

Evening found our group of 54 gathered at the delightful Higgins House for banquet and fellowship, so well arranged by Bill Asp and Dave Goldrosen. We were honored to have with us for a portion of the evening President Hazzard, who brought us up to date on new activities on the hill.

At the alumni luncheon on Saturday, our class initiated the 40-year gift to WPI with a substantial sum, especially considering that our class has always been known as the depression class.

Paul Nelson

CLASS OF 1937

Nineteen couples were on hand at Tech for the 35th Reunion of the Class of 1937 on Saturday, June 10th. President Bill Carew came the furthest distance—from Wilmington, Delaware—while several others made the trip in from New Jersey, New York, Connecticut, and elsewhere around the Commonwealth.

Daytime activities included the traditional class picture, special Alumni luncheon, ground breaking ceremonies for the new Ellsworth Residence (dormitory) and other afternoon festivities (some official and others not quite as formal).

In the evening, we gathered in the Janet Earle Room (in Alden Memorial) for a spirited social hour, followed by a very delicious roast beef dinner in the adjoining Music Room, very nicely arranged for the occasion.

In line with the relaxed atmosphere of the reunion, entertainment consisted of nothing more strenuous than the reading (with resulting reminiscing) of interested excerpts from the considerable number of letters and telegrams received from classmates located all over the United States and as far away as New Zealand (Frank Rollins).

Also we were honored the latter part of the evening by the presence of Steve Hebert (Alumni Secretary), Jean Hazzard and her husband George (President) who chatted informally with us about many aspects of life on and off the Tech campus these days.

Included in those attending were Bill

1937

1942

Carew, Gordon Crowther, Chapin Cutler, Mort Fine, Bill Frawley, Larry Granger, Caleb Hammond, Fran Harvey, Wes Holbrook, Ralph Holmes, Carl Larson, Dick Lyman, Jim Moore, Bob Powers, Foster Powers, Ray Schuh, Art Schumer, Paul Stone, John Sutliffe, and Bill Worthley.

With this nucleus we are "off and running" with plans for our Fortieth in 1977.

Gordon Crowther, Chairman

CLASS OF 1942

The class of 1942 held its thirtieth reunion on Friday evening, June 9, 1972. It was held at the Mt. Pleasant Country Club in Boylston. The social hour with fabulous hors d'oeuvres started at 6 p.m. followed by dinner at 7:30.

The Al Schwiegers and Ed Higginbottom were guests of the class, and both Al and Ed had a few fine words to say.

Although the turnout was small, everyone had a fine time. Those present were the Bob Allens, the Curt Amblers, George Andreopoulos, Ron Borrup, the Bob Chaffes, Hal Crane, Jim Fernane, the Herb Goodmans, the Bob Holdens, the Ed Jacobs, Steve Totti, and the Warren Zepps.

Herbert M. Goodman, Chairman

CLASS OF 1947

Rearrangement of the membership of the various classes immediately following World War II has established an official membership of 77 members for the class of 1947. Eleven classmates including Bill Rice, Carrol Burtner, Ed Swierz, Al Glazer, Don Thompson, Sam Ringel, Ed Lemieux, Norm Feldman, Ray Laferriere, Vince Zike, and John Hambor were fortunate to be on campus for the reunion activities.

At the Alumni Luncheon John Hambor presented Dr. Geo. Hazzard the Class Gift of $7,035 establishing "The Student Scholarship Fund of the Class of 1947." Later in the afternoon the class members had a delightful time at the Al Glazer homestead. Evening festivities included a cocktail hour and dinner at the fabulous Higgins Home. Honored guests of the class were Pres. Hazzard and Mrs. Hazzard, and Coach Charley McNulty and Mrs. McNulty.

John Hambor

CLASS OF 1957

The class of '57 began an active 15th reunion weekend with a cocktail party hosted by Fred and Shirley Barry on Friday evening, June 9th. After a sparsely populated class picture on Saturday morning, a class meeting was held with the principal topic of discussion being our 25th reunion class gift to WPI. Don Rising and Bob Yates presided over the meeting. It was agreed to implement a ten-year plan to raise a lump sum to be donated for a specific purpose. Al Papaioannou suggested the motto "Twenty-five for the Twenty-fifth" with reference to a twenty-five dollar annual donation each year until the twenty-fifth reunion.

After the alumni luncheon in Morgan Hall, the afternoon was spent touring the new campus, visiting local friends, or shopping at Spags! Prize winners for distance travelled to attend the reunion were George Klimchak from Florida and George Prozzo from Indiana. Most exciting job had to be Don Craig's. He is flying 727's for American Airlines. Some class members are self-employed, others in education, and many in industry—all doing well!

Saturday evening a prime rib dinner at Nick's Colonial Grille was followed by entertainment, dancing and socializing in the lounge. Those enjoying the evening were: Don and Marcia Rising, Bob and Sue Yates, Gerry and Cynthia Finkle, Al and Valerie Devault, John and Deanna Atchison, Paul and Marion Kerrigan, Bob and Arlene LeMay, Bill and Ann Rawstron, Herb and Mary Hemenway, Frad and Shirley Barry, Al and Marcia Papaioannou, Don and Nancy Craig, George and Ann Klimchak, George Prozzo, and Don Berth.

Alfred E. Barry, Chairman

1947

1952

1957

1962

CLASS OF 1962

The tenth anniversary of the Class of 1962 graduation was observed on Saturday, June 10, with relative moderation. Possibly a better choice of words would be that the occasion was met with a great burst of apathy by the class majority. Fifteen of the class total of 244 members attended the day's proceedings.

Fortunately numbers alone don't indicate the success of an occasion. For those who were present, the reunion provided good times and renewed friendships. Though most came from Massachusetts, Connecticut and New York, Dave and Judy Lyons drove up from Virginia to attend.

In the evening, fourteen couples joined for dinner at the Holiday Inn, downtown Worcester. At dinner and during the accompanying socializing, the whereabouts and goings on of each was learned. The evening was highlighted by a visit from President and Mrs. George Hazzard.

Those attending included Cliff Engstrom, Jay Fitzpatrick, Rudy Leistritz, Dave Lyons, Bill MacDonald, Pete Martin, Bob McIntosh, Spence Pooley, Paul Sharon, John Szymanski, Andy Terwilleger, Ed Weber and Dave Woodman. Verne Viele, who was on campus during the day with his family, was unable to attend the dinner.

Dick DiBuono, President

CLASS OF 1967

After a cocktail hour at the Higgins House, the Class of '67 had dinner at Putnam and Thurston's.

The stragglers then proceeded to the Penthouse for dancing 'til the wee hours of the morning.

In attendance were Mr. & Mrs. Roger Binkerd, Mr. & Mrs. Ronald Jolicoeur, Mr. & Mrs. Paul Kennedy, Raymond Fortin, Mr. & Mrs. Frank Manter, Mr. and Mrs. John Soulliere, and Mr. & Mrs. Peter Tallman.

COMPLETED CAREERS

WALTER T. GODDARD, '03

Walter T. Goddard died on January 13, 1972 following a long illness.

Born on January 19, 1880, he attended Webster (Mass.) High School and graduated as an electrical engineer from WPI in 1903.

After working as a graduate assistant at WPI, he joined the Locke Insulator Co. in Victor, N.Y. Later he founded the Canadian Porcelain Company, Ltd., Hamilton, Ontario, where he served as president for 46 years.

Always a faithful supporter of WPI, Mr. Goddard was a member of Sigma XI and also belonged to AIEE and the American Ceramic Society.

HAROLD B. LARNED, '05

Harold B. Larned, 89, of Glastonbury, Conn., passed away March 22, 1972.

He was born in Worcester in 1883 and graduated from WPI in 1905 as a civil engineer. For 47 years he was employed as a structural engineer with most of his work being centered along the Eastern Seaboard. In 1952 he retired from United Engineers and Constructors of Philadelphia, Pa. A life member of the National and Pennsylvania Societies of Professional Engineers, he also was active in the Darby Creek Joint Authority for Sewage Disposal, and as a member of the Academy of Natural Sciences and the Franklin Institute in Philadelphia.

L. BARRETT CAMPBELL, '07

L. Barrett Campbell, 87, of Waterbury, Conn., died November 24, 1971 following a long illness.

Born in Bridgeport, Conn., in 1884, he graduated from Worcester (Mass.) Academy and later studied at WPI.

Mr. Campbell, a life member of ASME, worked as a consulting and designing engineer for the American Chain & Cable Co., Inc., for 43 years. He was a member of Alpha Tau Omega Fraternity.

FRANK A. MARSTON, '07

A past president of the American Society of Civil Engineers, Frank A. Marston, passed away on February 22, 1972 in Gloucester, Mass. He was 86 years old.

He was born in Worcester, Mass. He received his degree from WPI in civil engineering in 1907. That same year he joined the Boston engineering firm of Metcalf and Eddy. He was a partner of the firm from 1920 until his retirement in 1966. His work was mainly in public water works and sewerage systems, for which he received wide recognition and the highest honors of his profession. In 1960 WPI awarded him an honorary Doctorate of Engineering.

Mr. Marston was past president of the Boston Society of Civil Engineers; a life member of the New England Water Works Association, the American Water Works Association, and the American Society of Testing Materials. A diplomate of the American Academy of Environmental Engineers and a Registered Professional Engineer in 14 states, he served as chairman of the board of engineers for the District of Columbia.

BRADFORD B. BINGHAM, '08

Bradford B. Bingham, 88, pendulum designer, passed away April 2 in Athol, Mass.

A native of Willimantic, Conn., he graduated from WPI as an electrical engineer in 1908. For over fifty years he was employed as a machine designer at United Twist Drill Division, UTD Corp., in Athol.

In 1964 he received national recognition for designing a version of a Foucault pendulum for clocks which kept time with remarkable accuracy.

FRED F. CHAPMAN, '09

Fred F. Chapman, 85, a retired assistant director of the technical division of the Du Pont Co., explosives department, died November 25, 1971 in Wilmington, Delaware.

He was born in Westfield, Mass. After receiving his BS in chemistry from WPI in 1909, he joined the Du Pont Co., where he remained until his retirement in 1951. His duties involved process work on chemical and explosives operations. During World War II he was involved in an advisory capacity in the development of explosives.

Mr. Chapman was a member of Sigma Alpha Epsilon and a 50-year member of the American Chemical Society and of the American Institute of Chemical Engineers.

ELWIN H. KIDDER, '09

Elwin H. Kidder died January 2, 1972 in LaPorte, Indiana.

He was born at South Wardsboro, Vt. He graduated from WPI in 1909 as a civil engineer. During his lifetime he worked with the Pennsylvania Railroad, the St. Lawrence Bridge Co., and Link-Belt Co. In 1942 he retired from his duties at the American Creosoting Co. in Chicago.

NORMAN B. POTTER, '09

Norman B. Potter, 85, a direct descendant of John Brigham, first settler of Northboro, Mass., died February 11, in Marlboro, Mass.

Potter began his banking career with the Commonwealth Trust Co. of Boston. He worked 40 years for the Worcester County National Bank, retiring in 1952. He also served as Northboro town treasurer and a director of the Northboro National Bank.

ERNEST W. BISHOP, '10

Ernest W. Bishop died on April 17 in Hamden, Connecticut. He was 84.

Born in Talladega, Ala., on October 14, 1887, he later studied at Mt. Hermon. In 1910 he graduated from WPI with a degree in mechanical engineering.

After working for the American Locomotive Co., Schenectady, N.Y., he joined the Western Electric Co., New York City, in 1917. He was a telephone specialist at the time of his retirement in 1952.

OTTO H. ESCHHOLZ, '10

Otto H. Eschholz of San Marino, Calif., passed away last winter at the age of 82.

He graduated from WPI in 1910 as an electrical engineer. He received his law degree from Duquesne University Law School in 1929 and was later admitted to practice before the Pennsylvania Courts, U.S. Supreme Court, and U.S. Patent Office.

Mr. Eschholz was employed by Westinghouse Electric and Manufacturing Company from 1910 to 1951. He made many

inventions relating to arc welding, circuit breakers, and transformers. Forty-eight patents were issued in his name. He retired as patent department manager in 1951. In 1936 he received the Westinghouse Order of Merit.

He was active in the Pittsburgh Chapter of the Alumni Association and a faithful supporter of the College.

FRANK W. GREEN, '10

Frank W. Green died March 20 in Clearwater, Florida. He was 85 years old.

Mr. Green was born in Lye, England. He graduated with a WPI degree in mechanical engineering in 1910. He worked for Technicolor Motion Picture Co., Heald Machine Co., and Telechron, Inc.

DONALD B. WHEELER, '10

Donald B. Wheeler, the retired president of Shipmark Co., Boston, died in Gloucester, Massachusetts on December 27, 1971.

He was born in Newtonville, Mass. He graduated from WPI in 1910 as a mechanical engineer. He was with Shipmark for forty years.

F. BERTRAM CLEVELAND, '12

F. Bertram Cleveland, 83, of Barrington, Rhode Island, died May 16, following a brief illness.

A native of Woonsocket, R.I., he was a member of Phi Gamma Delta fraternity.

For thirty years he was the owner and proprietor of the F. B. Cleveland Rubber Company in Providence. Later he was a sales representative for Barnes Rubber Co., Cranston.

Mr. Cleveland was a past president of the Rhode Island Chapter of the Alumni Association.

GEORGE R. BARKER, '13

George R. Barker, 80, died in Lawrence, Mass., on February 15 following a short illness.

A North Andover native, he graduated from WPI with a degree in electrical engineering. He was a member of Phi Sigma Kappa.

For more than 50 years he operated a dairy and produce farm.

A member of the New England Milk Producers Association since 1929, he was also a director of the Essex County Cooperative Farming Association.

VINCENT J. MLEJNEK, '13

Vincent J. Mlejnek, 79, died February 20 in Worcester, Mass.

For 46 years he was a quality control supervisor for the Graton & Knight Co. of Worcester. He retired 15 years ago.

His degree was in chemical engineering. He was a 50-year member of the American Chemical Society and past president of the American Leather Chemists Association.

GEORGE A. WIGHTMAN, '13

George A. Wightman of Bay Village, Ohio, died December 24, 1971, at the age of 80 years.

He was born in Holyoke, Mass., on June 6, 1891, attended Huntington High School, and graduated from WPI in 1913 as a mechanical engineer. For over 30 years, before his retirement in 1956, he was with the engineering division of the Associated Factory Mutual Fire Insurance Companies of Boston. A registered professional engineer of the State of Ohio, he also served in World War I.

BENJAMIN B. D'EWART, '15

Benjamin B. D'Ewart passed away at his home in Pasco, Washington, on January 30.

A Worcester native, he graduated as a civil engineer from WPI in 1915. He was a member of Phi Gamma Delta. A retired U.S. Army Lieutenant Colonel, he was president of the Franklin Soil and Water Conservation District and was on the board of directors of Bay Bend Electric REA.

ALFRED W. PRIDE, '15

Alfred W. Pride passed away April 6, 1972 in Oakland, Calif., at the age of 78.

For 37 years he was with the Westinghouse Electric Corporation. In 1959 he retired after having served as power transformer commercial engineer and division representative for five western states.

A member of Sigma Alpha Epsilon and Pi Tau Sigma, he was also a California State Professional Engineer and a Life Member of AIEE.

WILFRED D. CHAPMAN, '17

Wilfred D. Chapman of Secane, Pa., passed away recently at the age of 77 years.

After studying civil engineering at WPI, he accepted a position with the Providence Water Supply Board. He retired in 1958 from General Electric Company in Philadelphia, Pa.

A member of Phi Sigma Kappa, he was also a licensed professional engineer.

STANLEY G. CHILSON, '17

The official police photographer for Franklin, Mass., Stanley G. Chilson, died March 17 in Wrentham. He was 81 years old.

After attending Dean Academy and WPI, he devoted most of his life to photography. He was official fire photographer in area towns, and his films are well known to the Boston Firefighters Association.

RAYMOND H. SHAW, '18

Raymond H. Shaw, 77, passed away April 26, in Rutland, Vermont.

From 1916 until his retirement in 1959, he worked as a senior toll testman for New England Telephone and Telegraph Co. His interest in electronics led to his being one of the several East Coast crystal radio operators who heard the cries for assistance from the ocean liner Titanic, which struck an iceberg off the coast of Newfoundland and ultimately sank in April of 1912.

EDWARD J. P. FISHER, '21

Edward J. P. Fisher passed away on January 26, 1972 in Riverside, California.

Professor Fisher was born in Berlin, Germany and graduated as a chemical engineer from WPI in 1921.

He was the recipient of the Wire Association Award in 1933 and was a practicing metallurgical consulting engineer. During his 22 years with the Youngstown University (Ohio) he established the department of metallurgical engineering and was chairman from its inception. A member of Lambda Chi Alpha, Prof. Fisher was also an active member of the Wire Association, American Society for Metals, and the American Ordnance Association.

RALPH G. NOURSE, '22

Ralph G. Nourse of Providence, Rhode Island, passed away January 3 after an extended illness.

Mr. Nourse, who was retired, was the former owner of the Carter Insulation Co., Providence.

DANA S. GREENLAW, '24

Dana S. Greenlaw, 72, passed away on April 1 in St. Petersburg, Fla.

An electrical engineering graduate of WPI, he was a former district manager with Sonotone Corp.

Shortly before his death, Mr. Greenlaw had written a book on printing for amateurs. He set all the type and made all the illustrations himself, and privately printed it on his own press in an edition of 30 copies. One of those 30 is now in the WPI Library.

JOHN N. STYFFE, '24

John N. Styffe, the retired Director of Building for S. H. Kress & Co., New York City, died in February at the age of 72.

His degree in civil engineering from WPI led him to jobs with Eastern Bridge and Structural Co., Worcester; Scofield Engineering Co., Los Angeles, Calif.; Aberthaw Construction Co., Boston; and Post & McCord, New York. He retired in 1959.

Mr. Styffe, who was active as a WPI Alumni Council representative, and former treasurer of the New York Chapter, was a member of Phi Sigma Kappa Fraternity and a corporate member of the American Institute of Architects.

VICTOR CARADONNA, '25

Victor Caradonna, 70, passed away on February 14, 1972 in Toms River, N.J.

After graduation from WPI he joined the Consolidated Edison Co., New York City, where he worked until his retirement. During World War II he served in the Navy Engineer Corps in Africa and Italy.

ELLSWORTH B. CARPENTER, '27

Ellsworth B. Carpenter, 67, a retired railroad supply executive, died April 19 in Kirkwood, Mo., after a long illness.

From 1927 until 1959 he was associated with ACF Industries (formerly American Car & Foundry Co.) as vice president in charge of eastern region sales. He then joined Alco Products, Inc. (American Locomotive Co.) as sales manager of the spring and forge division until his retirement in 1970. Mr. Carpenter was also vice president and director of Utility Service and Maintenance, Inc., Clayton, Mo.

JAMES C. ROGERS, '27

James C. Rogers, the former superintendent—fire training for the Vocational Educational and Extension Board, Nassau County, New York, died March 18, 1972.

He was born in Webster, Mass. His WPI degree was in mechanical engineering. Mr. Rogers served Nassau County in a variety of positions for many years. Previously he was a plant engineer for the New York Telephone Co., and a designer for the Curtis Aeroplane Co.

A member of Phi Sigma Kappa, he also belonged to the National Fire Protection Association.

JOHN F. WOOD, '27

John F. Wood of Newton Center, Mass., passed away suddenly December 26, 1971.

An electrical engineering graduate, he worked as a financial analyst with Sheraton Corp. of America, Investment Trust of Boston, and ITB Management Corp., Boston.

He was a member of Phi Sigma Kappa Fraternity.

DWIGHT E. JONES, '28

Dwight E. Jones, 67, a former WPI trustee and retired vice president of the Jones Division of Beloit Corp., Pittsfield, Mass., died April 26, 1972 in Arcadia, California.

Mr. Jones was born in Otis, Mass. During his years at WPI he worked summers at the Jones paper machinery mill. After he received his degree in mechanical engineering, he was assigned to special cost analysis work. Working his way up the ladder, he became chief engineer and director in 1939. In 1953 he was made vice president and in 1956, he was elevated to executive vice president.

He was issued 15 patents on ideas he developed for improvements in equipment manufactured by the company. He wrote a number of technical papers and a history of the Jones company.

Active in civic affairs, he was the former chairman of the Pittsfield Sewer Commission; director and president of the YMCA; director of the Girls Club; and past president of the Y Men's Club. He also belonged to the Kiwanis and Rotary Clubs. In 1959 he received the annual civic award of the South Congregational Church Brotherhood. Professionally he was a member of ASME, TAPPI, Tau Beta Pi, and Sigma XI. Last winter he was honored by being elected a WPI Trustee Emeritus in recognition of his active service on the Board from 1956 to 1966.

HAROLD L. PARTRIDGE, '28

Harold L. Partridge, 66, who recently retired as chief chemical engineer at Picatinny Arsenal, Dover, N.J., died April 25, 1972 in Newton, New Jersey.

He graduated from WPI as a chemical engineer.

Prior to his association with the Picatinny Arsenal, he had been located at various arsenals and chemical installations at Washington, Pa., Weldon Springs, Mo., and Tamaqua, Pa.

ALLEN HASTINGS, '29

Allen Hastings, 67, died May 6 at his home in East Douglas, Massachusetts.

Mr. Hastings was a design engineer at Collins Brothers Machine Co., Pawtucket, R.I.

LOTHAR A. SONTAG, '29

Lothar A. Sontag died April 17, 1972 in Tonawanda, New York. He was 64 years old.

Born in Clinton, Mass., he graduated from WPI as a chemical engineer. For many years he was with Hooker Chemical Corporation, Durez Plastics Division, North Tonawanda, N.Y. A senior research scientist, he was credited with making major contributions to the success and growth of the plastics industry. A holder of six patents issued to Durez, he produced the first mobilator, a patented device for accurately measuring critical flow of phenolic resin materials in molding operations. He also developed the "cup test" for measuring the flow or plasticity of molding compounds, a test that was adopted for the industry by the American Society for Testing Materials and which is still a standard.

Mr. Sontag retired in 1970. He was a member of Sigma Xi, ACS, AIC, ASTM and the Masonic Order. Active in the Alumni Association, he was formerly president of the Western New York Chapter and was also an Alumni Council delegate.

WARREN C. WHITTUM, '30

Warren C. Whittum, former president of the WPI Alumni Association and a WPI trustee, passed away February 17, in Derby, Conn. He was 63 years of age.

Mr. Whittum was born Dec. 20, 1908 in Worcester, Mass. He attended North High School and graduated from WPI in 1930 as a civil engineer.

Until retiring several years ago, he had been employed as director of engineering development for the Farrel Co., Ansonia, Conn., and later as director of development and research for the City of Ansonia.

Mr. Whittum was past president of the Ansonia Community Chest, the Ansonia Rotary Club and YMCA, and the Housatonic Council of the Boy Scouts of America. He was a director of the Ansonia Water Co. and the Savings Bank of Ansonia. He was also an honorary trustee of Griffin Hospital in Derby, a member of the Graduate Club of New Haven, Sigma Alpha Epsilon, Tau Beta Pi, and Sigma XI.

CLARENCE W. ASHCROFT, '41

Clarence W. Ashcroft of Massapequa, L.I., New York, died December 25, 1971.

Born in Lynn, Mass. on November 2, 1918, he graduated from Tilton (N.H.) Academy and later attended WPI.

He was formerly with the Prebuilt Company.

CAMERON F. CAMPBELL, '48

Cameron F. Campbell of Elizabethtown, Pa., passed away January 6, at the age of 44 years.

Mr. Campbell, an associate member of AIEE and AISE, was an electrical engineer at the Naval Ship Engineering Center, Mechanicsburg Division, Standardization Branch, Mechanicsburg, Pa.

GORDON E. HALL, '48

Gordon E. Hall of Barrington, Rhode Island, passed away April 14 at the age of 50.

He was chairman of the mathematics department at St. Andrews School, Barrington. Previously he had been a resident master of Laurelcrest Preparatory School, Bristol, and the owner-director of Creative Services, a commercial art agency in Hartford. He had also been with The Factory Insurance Association.

A member of Phi Sigma Kappa and Pi Delta Epsilon, he also had served as councilman for the Town of Paramus, N.J., and on the Mayor's Committee for Youth in Hartford.

THOMAS J. McNAMARA, '50

Thomas J. McNamara passed away on November 26, 1971 at Memorial Hospital in Worcester, Mass. He was 42 years old.

Born in Worcester, he graduated from WPI with a degree in electrical engineering.

Mr. McNamara, a member of Phi Kappa Theta and Eta Kappa Nu, was a sales engineer for Machinery Electrification, Northboro, Mass.

SIDNEY J. LAINER, '58

Sidney J. Lainer, 43, died in Longmeadow, Massachusetts on February 9.

He was an electronics engineer at Hamilton Standard and later at the Springfield (Mass.) Armory for six years.

EMERY G. SWARTZ, SIM '67

Emery G. Swartz, 59, manager of manufacturing engineering for Crompton & Knowles Corp., Burlington, North Carolina, died April 4, 1972.

He was born in Pennsylvania and was educated at the University of Kansas, Pennsylvania State University, Swarthmore College, and WPI's School of Industrial Management.

Until last fall he was with Crompton & Knowles in Worcester where he began as chief tool engineer in 1961. Previously he was with Curtiss-Wright Research Division, Westinghouse Aviation Gas Turbine Experimental Division, and Westinghouse Electric Corporation's Aviation Gas Turbine and Steam Turbine Divisions.

YOUR CLASS AND OTHERS

NOTICE!

Items appearing in Completed Careers and Your Class and Others are based on information received at the Alumni Office by June 1, 1972. Deadline for the October issue is August 1.

1908

"Although they are not as noisy as they used to be, the Class of 1908 claims they have not reached the point where they can be placed in the category of extinct species of Techmen," writes DONALD D. SIMONDS, secretary. "There are only 16 of us now left, including ELLIOTT A. ALLEN, who for years has been listed in the Alumni Directory as 'address unknown,' " he continues. "1908 is getting nearer the front of the Directory each year, but that doesn't bother us for we were always up front."

Every Sunday afternoon for the past six years Don Simonds has been calling on HERBERT P. SAWTELL at the Lincoln Nursing Home, 299 Lincoln St., Worcester, Mass. 01605. (He admits that perhaps his attendance there has been more regular than at church.) Don says Herb would greatly appreciate receiving a card or letter from his classmates even though a stiff hand would prevent his writing a reply. Herb spends most of his days in a wheelchair solving crossword puzzles, reading and listening to the radio.

RICHMOND W. SMITH, who had seven children, now has twenty grandchildren and eight great-grandchildren. "Can any other class compete with these figures?" Don asks.

1910

F. LELAND HEWES writes that he and his wife Mildred are kept busy sitting with grandchildren and great-grandchildren. The latest addition to his family is a great-grandson, David Leland Hanket, born in Newton, Mass. in May of 1971. Fred says he still drives but tires after 200 miles. After a 200-mile drive, who doesn't? . . . "HAP" MARTIN has reported to class secretary CHARLES E. BARNEY that he is no longer called "Hap"—now it's "Jerry." However he will always be "Happy" Martin to 1910 men.

1912

Through Mrs. HERBERT F. TAYLOR we have learned of the death of Mrs. JAMES W. CUNNINGHAM on February 27, 1972 in North Carolina. Mr. Cunningham, who passed away in 1961, was president of the Alumni Association from 1941 to 1943 and a member of the board of trustees from 1945 to 1955.

1914

WILLIAM H. MELLEN, under the sponsorship of the National Huguenot Society, will take a six-week jaunt through England and France this fall—and all because he has devoted his lifetime to tracing his family tree. During his lifetime search he has discovered that he is a descendant of the signers of the Magna Charta in 1215, William the Conqueror, Charlemagne, and 21 American patriots indluding John Alden of the Mayflower and colonial clergyman Roger Williams. During his fall trip he hopes "to catch up with some loose ends and fill in the gaps in the family tree."

1921

After wintering in Palm Beach, Fla., EARL B. PICKERING has returned to his home on Old Gibson Rd., New Ipswich, N.H.

1923

ERWIN H. MATTSON has retired as manager of the Union Furniture Co., Worcester. . . . ALBERT H. PENDLETON has retired as a partner of Pendleton, Neuman, Williams & Anderson, Chicago, Ill. He will continue in active practice as counsel to the firm. . . . After 44 years of service, JOHN H. TSUI has retired from his duties at Westinghouse Electric Corp., Sharon, Pa.

1924

EDWARD H. GOODRICH has been awarded the first Red Shield Award ever presented by the Bristol (Conn.) Salvation Army. Mr. Goodrich, who retired in 1965 as the attorney in charge of the Bristol office of General Motors patent section, has been active in working with the Salvation Army Advisory Board. The Red Shield Award is presented to an "outstanding member of the community in recognition of faithful and efficient leadership." Mr. Goodrich has also served the Chamber of Commerce; Clock Museum; Kiwanis Club (as president and secretary); the Boy Scouts (for which he received the Silver Beaver Award); and the First Congregational Church (as deacon and past president of the Men's Service Club).

1926

CHARLES B. HARDY, superintendent of the Worcester Bureau of Water and a deputy commissioner in the Dept. of Public Works, retired Aug. 1. He has been superintendent since 1942 and was named a DPW deputy two years ago. He joined the Worcester DPW in 1930 after having served 12 years with the Bureau of Sewers. City Manager McGrath said that Hardy "has been a credit to the city—He has an established reputation as one of the best water engineers in the state." . . . CHARLES M. HEALEY, JR., has been presented the Harry J. Graham Memorial Award in appreciation of his devotion to the purchasing profession by the Purchasing Management Association of Boston. Healey, who is currently the executive director of the Holyoke Taxpayers Association, was the Springfield (Mass.) Purchasing Agent for 22 years. He is the first municipal purchasing official to receive the Graham Award and is also the first person outside the Boston area to be named. In 1967 he won the William Pynchon Award for distinguished civic service while the previous year he received the Boy Scout Silver Antelope Award. He was the first Scouter in the U.S.A. to receive the St. George Cross, the highest religious award the Catholic Church bestows on a Scout. . . . C. HAROLD NORDSTROM, retired as staff director of planning and control in the government products group of Avco Corporation, is now the permanent chairman of the Massachusetts Business Task Force for School Management, Inc. The Task Force, which is made up of 33 top business executives, has studied the business aspects of more than 200 school departments, including Worcester, on a voluntary basis. Mr. Nordstrom, as chairman, is convinced that the principal answer to soaring public school costs lies in the adoption of modern business techniques by school administrations.

1929

IRVING H. CAMPBELL, formerly with the U. S. Envelope Co., Worcester, has retired. . . . STEPHEN D. DONAHUE, business and financial editor of the

HAT IN THE RING

Who says you have to be a lawyer or a political scientist in order to be a winner in politics?

If David F. Emery, EE '70, had believed that old chestnut, he wouldn't have run for a seat in the Maine State House of Representatives—so, of course, he couldn't have won. But he *did* run and he *did* win after defeating a 22-year veteran incumbent in the primaries by the amazing margin of nearly 2 to 1.

Dave, a communications equipment engineer, has been involved in Republican politics in his home town of Rockland since he was 15. In 1968 he attended the Republican convention in Miami.

Now a duly elected representative, he is especially interested in the problem of state property taxes and has done much research in preparation for his presentation next year of a bill to revamp the present system.

Already with an eye on the future, he plans to campaign again next term, and if reelected he hopes to run for the position of house majority leader. If all goes well in this venture, he would be pleased to try for a U.S. House seat in 1974.

David Emery's political future appears to be bright, indeed.

Another EE, Edwin F. Nesman, '55, currently a staff engineer at EG & G, Inc., Bedford, Mass., was recently elected to the Bolton School Committee. A member of the Bolton Citizens Association for three years and chairman for the past two, he also served as financial secretary of the school building committee during the construction phase of a one-million dollar addition to the Emerson School.

A former design engineer for the General Electric Company, high school science teacher, and present director of science for the Braintree (Mass.) Public Schools, was a successful candidate for a seat on the Georgetown School Committee last spring. Dr. Charles A. Woodman, PH, '48, the newly elected committee member, believes that local control of the schools should be preserved to the fullest extent permitted by law and that "we must maintain a balance between desirable educational programs and facilities and the ability of the town to pay for them."

Paul W. Snyder, Jr., '53, has been elected to the Pitman (N.J.) Board of Education. After the election he said, "We will try to do what we can to provide the best possible education within the limits of our tax capabilities." Paul is with Mobil Corp., Paulsboro, N.J., as R & D manager.

In the November elections Marcus A. Rhodes, Jr., ME, '40, treasurer and assistant manager of M. M. Rhodes & Sons, Taunton, Mass., won his 6th term on the Taunton School Committee, while antiques dealer, Sturgis A. Sobin, '48, won his first full term as Mayor of Ansonia, Conn.

So, a growing number of WPI men are channeling their lives into public service and meeting a variety of challenges. They are winners—in every sense of the word.

Worcester Evening Gazette, has retired after more than 40 years as a reporter and editor. While he was a student at WPI he began his newspaper career as a campus correspondent for the *Worcester Telegram*. In 1931 he accepted a full-time reporting job with the *Evening Gazette*. While serving as city editor, his home was destroyed by the 1953 Worcester tornado. The next day he wrote a first-person account of his impressions of the disaster which won second prize in the New England Associated Press News Executive Association contest. In 1959 he was awarded the certificate of recognition for the Continental Air Command for his services in the Air Force Reserve, from which he retired with the rank of colonel in 1967. Mr. Donahue is Director of the WPI News Bureau. . . . J. KENDALL FULLERTON has retired from his position as eastern sales manager for the Simonds Saw & Steel Division, Wallace Murray Corp. . . . GEORGE V. KENNEDY, former manager of the Massachusetts Electric Co. Division in Leominster, was honored at a retirement dinner given in Shirley in March following his 43 years of service with the company. The 225 persons present at the testimonial dinner saw him presented with a chain saw from his associates, a citation from the state House of Representatives and a plaque given in recognition of his wide range of community service from the Mass. Dept. of Commerce. . . . EDWARD E. LANE works as regional manager for NAPCO Graphic Arts, Inc., Milwaukee, Wis.

1930

HERBERT W. DAVIS has retired as vice president, research, Triumph Machinery Co., Hackettstown, N.J. Now he serves as vice president, product development, Brunt Equipment Co., Mt. Holly, N.J. . . . ALLAN L. HALL reports that he has retired after 32 years with the U.S. Post Office Dept., Portsmouth, N.H. . . . DANIEL S. HORGAN, SR., chief engineer of the (Mass.) State Department of Public Works, was the keynote speaker at the March testimonial held in Framingham for retired DPW Commissioner, Harry P. Loftus. Horgan, a personal associate of Loftus for over 25 years, has served 42 years with the Commonwealth since graduating from WPI. Recently he received the seventh annual Booster Award given by the Auburn (Mass.) Chamber of Commerce. The award is presented to an Auburn resident who has given outstanding service to the community. Horgan was active in Boy Scouting for over 30 years. In 1947 he became the first president of the Auburn High School PTA. He has served as a commissioner of the Auburn Water District and on the local Board of Appeals . . . JOHN J. LYONS is the new deputy chief engineer for highway maintenance for the Mass. Dept. of Public Works. He will be responsible for the maintenance of all state highways and bridges, including snow removal, roadside development, signs, and signalling, as well as procurement and upkeep of highway equipment. A veteran of 43 years with the DPW, he has been serving as the department's research and materials engineer. . . . WARREN R. PURCELL was a staff member at the 17th Annual Practical Statistical Engineering Institute held in June at The University of Connecticut, Storrs. Purcell has been a factory engineer, quality control supervisor, and quality control manager for the Brown Company. Until recently a private consultant, he is now chief of Reliability Engineering and Quality Control for Raytheon.

1932

Vice Admiral FRANCIS J. BLOUIN, US Navy (ret.), has been chosen Grand Marshall for the Northbridge (Mass.) Bicentennial Parade slated for July 16. Admiral Blouin, during 36 years of commissioned service, saw duty with the Chief of Naval Personnel; Commander in Chief, U. S. Pacific Fleet; Chief of Naval Operations; and with the Joint Chiefs of Staff. In June 1968 he became Deputy Chief of Naval Operations after having served as Commander of the Pacific Fleet Amphibious Force. . . . JOHN NIZAMOFF writes that he has time for reading and gardening now that he is retired from Engelhard Industries, Newark, N.J. He spends the summer months at the Jersey Shore.

1933

The former president of Mills Pharmaceuticals, Inc., and Glencoe Research, Inc., St. Louis, Mo., DR. HERMAN W. DORN, is now the owner and director of Dorn & Co. (food and drug consultants), of Glendale, Calif. . . . GEORGE W. NICOLETTI serves as regional manager for Gibbs Wire & Steel Co., South Bend, Indiana.

1934

GORDON S. CRUIKSHANK is the new vice president of Gregory & Appel, Indianapolis, Ind. He has spent 36 years in the insurance business. Until his promotion he served as secretary of the firm. . . . LUTHER C. LEAVITT, former president of The Otto Konigslow Mfg. Co., Cleveland, Ohio, has been elected vice chairman of the board of the company.

1935

ALFRED CANTOR serves as West Coast area manager for FLUOR Ocean Services,

Inc., Santa Barbara, Calif. . . . THEODORE D. McKINLEY, a pigments department research supervisor at Du Pont's Experimental Station, Wilmington, Del., has been elected president of the Electrochemical Society, Inc. He has served as vice president twice and five terms as a member of the organization's board of directors. The society is devoted to the advancement of electrochemistry, electrometallurgy and electronics. Its membership of 5,000 is drawn from scientists associated with industry, education, and government. . . . GEORGE H. PERRY has been named manager of finance for the Warner & Swasey Co., Grinding Machine Division. It is a newly created position at the Worcester plant, which was recently purchased from Norton Co. Previously, Perry was controller of the division for Norton.

1936

ROGER W. BRUCE has been named to the Worcester City Planning Board. Now retired, he was formerly general superintendent of the Worcester Works of U.S. Steel Corp.

1937

ERVING ARUNDALE has retired from his position as president of Esso Research in Europe and is currently living in South Yarmouth, Mass. . . . MORTON S. FINE has formed a new company, Morton S. Fine & Associates, Inc., in Bloomfield, Conn. It is an engineering, surveying, and landscape architectural firm. Mr. Fine is also the present chairman of the Hartford Conservatory of Music. . . . A. HAMILTON POWELL holds the post of director of engineering, Arrow-Hart, Continental Division, Florence, Ky.

1938

JOHN G. DESPO has been promoted from director of engineering to vice president-engineering of Granite City Steel Company, Granite City, Ill. Mr. Despo went to Granite City Steel, a subsidiary of National Steel Corporation, in 1970 as director of engineering in charge of the Engineering Dept. Previously he was manager of construction for the Chicago District of United States Steel Corporation. Before joining U. S. Steel he was with the Massachusetts Highway Dept. and Metropolitan Boston Water Supply Commission. . . . DR. JOHN B. SCALZI, coordinator of the engineering program at Research & Technology, U. S. Dept. of HUD, Washington, D.C., resides in Arlington, Va.

1939

JACK F. BOYD writes that he is semi-retired as chairman of the board of the Nashua (N.H.) Brass Co. . . . DR. DONALD M. BURNESS has been appointed as a senior research associate in the organic research laboratory at the Kodak Research Laboratories, Rochester, N.Y. He joined Kodak in 1939 as a chemist in the synthetic chemicals division and in 1942 participated in a national defense research program at the University of Illinois. In 1945 he returned to Kodak as a research chemist. He was appointed a research associate in the chemistry division of the Kodak Research Laboratories in 1956. . . . EDWARD C. DENCH, a Raytheon Company engineer, is the inventor under a recent patent assigned to the company of a cold cathode traveling wave tube with improved operating characteristics. Traveling wave tubes are used in microwave radar communication and other electronic systems. The inventor has been a staff consultant in Raytheon's Microwave and Power Tube Division in Waltham, Mass. for 24 years. A member of Sigma Xi and Tau Beta Pi, he holds more than 60 patents on microwave tubes and in associated fields. . . . CARL W. LEWIN has been named president of the International Division of The Austin Company, Cleveland, Ohio. Previously he was vice president and sales manager responsible for coordination of sales activities of the company's overseas subsidiaries. Mr. Lewin joined the company in 1940 as an assistant project engineer in the Chicago district where he played an important role in the development of many major Austin projects in the middle west. He is a member of the American Society of Chemical Engineers and the American Management Association. . . . HAROLD E. WHITE was recently appointed general manager of the Bonded Products Division of Norton Abrasives Ltd., England. White joined Norton in 1946 as an engineer and later was director of manufacturing for the Abrasives Materials Division, Worcester.

1940

WILFRED T. BLADES has retired as works supervisor, process control, at American Steel & Wire Co., Worcester. . . . The first administrator for Atlantic County, N.J., is ROBERT J. CANNON. In his newly created position, Cannon will be working for the county Board of Freeholders. He has spent the past 29 years in federal engineering services.

Despo '38

Burness '39

Lewin '39

1942

ERIC W. ESSEN, former executive assistant to vice president of manufacturing for the L. G. Balfour Co., Attleboro, Mass., has joined General Business Services as an area director responsible for activities in Attleboro, North Attleboro, Easton, Norton, and Mansfield. . . . PAUL YANKAUSKAS is with Thermco Products, Orange, Calif.

1943

S. BAILEY NORTON, JR., has been named a director of Daniel O'Connell's Sons, Inc., building contractors, of Holyoke, Mass. He is general manager of Acme Chain Division of North American Rockwell Corp., Holyoke. . . . ROBERT S. SCHEDIN, former director of engineering for Crompton & Knowles Corp., Worcester, has been named vice president of Fairlawn Hospital. He will be responsible for preparing and implementing a plan to enlarge the hospital's service to the Worcester community.

A technology breakthrough that could reinvigorate the SST-less aerospace industry has come from the planning board of Dr. RICHARD T. WHITCOMB, '43, the NASA scientist who discovered the "Coke bottle shape" design that made supersonic flight practical in the 1950's.

Because of his vision, jet airliners may someday cruise 20 per cent faster on the same amount of power. Promise of this bonus in speed comes from NASA's supercritical wing, which Whitcomb designed. The prototype has been installed on a Navy F-8 jet and test flown successfully during the past year. The basically new airfoil shape permits aircraft to fly at increased speeds before encountering a significant rise in aerodynamic drag.

Theoretically, jet airliners that cruise at about 550 m.p.h. will be able to fly considerably closer to the sonic barrier, gaining over 100 m.p.h. without having to use more powerful engines. This would shave at least two hours off an eight-hour flight.

The innovative wing is flatter on top than are conventional wings, and has a curved trailing edge. As an extra bonus, engineers have found that it can be thicker, allowing more fuel to be carried and thereby increasing the range of the aircraft.

The Whitcomb wing may help the U. S. aerospace industry get firmly back onto its feet again.

1944

"Electric Power and a Clean Environment—Can We Have Both?" was the title of the talk given by JOHN W. LEBOURVEAU at the March meeting of the International Management Council's Zone 52 Chapters held in Taunton, Mass. Lebourveau, who is manager of environmental research for the New England Electric System, is responsible for technical programs of environmental effects evaluation for the Massachusetts Electric Co., the New England Power Co., and the Narragansett Electric Co. . . . WALLACE A.

UNDERWOOD is sales manager for Marshall Marine Corp., South Dartmouth, Mass.

1945

JOHN A. TEMPLETON holds the position of senior staff engineer with TRW Systems Group, Norton Air Force Base, San Bernardino, Calif.

1946

Principal engineer at Westenhoff & Novick Consulting Engineers, Wheaton, Ill., is ALFRED J. WOOD.

DONALD H. GILMORE has been appointed sales manager of Rodney Hunt Company's water control equipment division in Orange, Mass. The division produces sluice gates and related equipment for water pollution and flood control projects. A former research assistant at WPI's Alden Hydraulic Laboratory, Gilmore joined Rodney Hunt in 1952 as a technical sales engineer in the water control equipment division. Prior to his recent promotion, he had held a number of managerial posts with the company.

FRANK L. MAZZONE serves as vice president and general manager of Acres American, Inc., an engineering and consulting firm that is currently moving from Niagara Falls to new quarters in Buffalo, N.Y.

1947

DR. MORREL H. COHEN, University of Chicago professor in the James Franck Institute in the Departments of Physics and Theoretical Biology and in the college, has been appointed the Louis Block Professor of Physics and Theoretical Biology. Cohen, who has written more than 125 research

Cohen '47

Shupp '47

publications, joined the university as an instructor in 1952 and became a full professor in 1960. From 1968 until last year he was director of the James Franck Institute, an association of scientists with primary interests in the study of chemical physics and solid-state physics, especially the condensed states of matter. He is a former Guggenheim Fellow and National Science Foundation Senior Postdoctoral Fellow. Currently he is a Fellow of the American Physical Society and a member of Sigma Xi. . . . ROBERT C. MARK is manager, new plant/non-union relations for the corporate employee relations staff at General Electric Co., New York City. . . . GEORGE A. SCHUPP has been elected vice president and chief engineer, color TV products, for Zenith Radio Corporation, Chicago, Ill. He joined Zenith in 1966 as staff assistant to the vice president and chief engineer. He was named director of television engineering in 1971 and chief engineer, color TV products, earlier this year. Previously he was vice president and director of operations for Trans-American Electronics, International, Inc. For three years, he was chief engineer of the Magnavox Company. He was with G. E. from 1948 to 1963. . . . Scan-Optics, Inc., East Hartford, Conn. has announced the appointment of DONALD B. THOMPSON as board chairman, president and chief executive officer of the company. After 20 years in the computer industry, Thompson comes to the firm from Potter Instrument Co., Long Island, where he was vice president and a member of the board of directors. Prior to joining Potter in 1968, he spent 17 years with IBM holding positions in advanced systems design and general management. Scan-Optics, which he now heads, produces optical character recognition systems.

1948

ROBERT H. ADAMS has been appointed manager of the Home Entertainment Strategic Planning Operation for the General Electric Company. His office is located at Operation headquarters. . . . ERNEST P. FERNSTEN serves as airways facilities sector manager for the Federal Aviation Administration at Buffalo (N.Y.) International Airport. . . . ROBERT W. HENDERSON has been promoted to vice president of marketing at Rodney Hunt Co., Orange, Mass. Mr. Henderson will be responsible for the sales activities of its water control equipment division, textile machinery division, international sales division, industrial rolls division and advertising. In 1956

ALUMNI TRUSTEES

Fyler '45

Smith '37

Bonin '38

Anson C. Fyler, '45, J. Morrison Smith, '37, and Charles C. Bonin, '38, Alumni Council nominees for the WPI Board of Trustees, were elected to serve as board members June 3.

Fyler, who was elected to his first five-year term as trustee, is chairman of the board and president of Arrow-Hart, Inc. (manufacturers of electrical wiring and controls), Hartford, Conn. He is also director of Veeder Industries, Connecticut Bank & Trust Co., and Phoenix Mutual Life and the Manufacturers Association of Hartford County. A resident of West Hartford, he is married and has two sons.

Smith, also a first-term trustee, is president of National Radio Institute (electronics school), Division of McGraw Hill, Inc., Washington, D. C. He is an officer and founder of the Macamor Foundation of Washington; chairman of the Providence Savings and Loan Association; and a director of the Washington Society for the Blind, Washington YMCA, and Capital Radio Engineering Institute. He is the son of James E. Smith, '06 and the uncle of Michael Galbraith, '58. Married and the father of four children, Smith resides in McLean, Va.

Bonin was reelected to his second five-year term on the Board of Trustees. He is president of Chemical Construction Corporation, New York City, a subsidiary of Boise Cascade Corporation. Since joining Chemico he has been involved in the engineering and erection of plants valued at more than one billion dollars in the United States and around the world. He is the only professional engineer to hold engineering licenses in all the 54 states and territories. A member of the Executive Committee of both the Board of Trustees and the Alumni Association, he is married, lives in Mendham, N.J., and is the father of two children.

Fifteen WPI trustees who have at various times served on the board with distinction were elected to the newly created position of Emeritus Trustee at the winter meeting of the Board of Trustees.

Following the election, Pres. Hazzard said, "We are pleased that we can continue to enjoy the wise counsel of these men. We look forward to their giving continued leadership and support to WPI."

Those elected were: J. Norman Alberti, '24; Phillip R. Delphos, '26; Sidney W. Farnsworth, '06; Dr. William E. Hanson, '32; Frank C. Harrington, '98; Chandler W. Jones, '26; Dwight E. Jones, '28 (Deceased April 1972); Arthur W. Knight, '29; Harry B. Lindsay, '13; Burton W. Marsh, '20; Charles R. Michel, '37; Arthur Nutt, '16; Warren W. Parks, '17; George W. Smith, Jr., '15; and George A. Walker, '22.

he joined the firm as an application engineer. In 1962 he advanced to product manager and to division manager two years later. He was elected vice president and manager of the water control equipment division in 1970.

1949

ROBERT W. BATCHELDER has been appointed as a vice president of Johnson & Higgins of Pennsylvania, Inc. (International insurance brokers and employee benefit consultants). He joined the Philadelphia office in 1964 and became an assistant vice president in 1967. He has been a senior account executive in the commercial department. . . . KARL R. BERGGREN, JR., is manager of quality control for Buffalo Forge Company, Buffalo, N.Y. . . . Capt. JAMES B. MORIN, USN, is commanding officer of the USS LaSalle, an amphibious transport dock of the Atlantic Fleet. In June Capt. Morin was slated to take the LaSalle to the island of Bahrain in the Persian Gulf, where she will become the flagship for the Commander, Middle East Forces. The LaSalle will be the U.S. Navy's only representative in that part of the world. . . . LEO D. ROSE has recently joined Baldwin Stewart Building Systems in North Haven, Conn., where he is active in sales promotion, public relations, engineering and "design-build" contracting. He is the current president of the Connecticut Building Congress, Inc. . . . ROBERT A. ROWSE has been named director of research and furnace plants for the Norton Co. Abrasives Division, Worcester. Formerly he was director of research. . . . ELLSWORTH M. SAMMET has been promoted to District One Construction Engineer at the Lenox (Mass.) office of the State Dept. of Public Works. Previously he served as the District Two Maintenance Engineer at the Northampton office.

Batchelder '49

McComiskey '51

1950

Married: ROBERT L. TAGEN and Miss Marie Leonne Couture in Gardner, Massachusetts on March 24, 1972. Mrs. Tagen is assistant treasurer of The Gardner News, Inc. Her husband is a media salesman with J. Bain, Inc.

LESTER J. REYNOLDS has been appointed manager for textile dyes and textiles at the American Cyanamid Company, Bound Brook, N.J. With Cyanamid since 1956, he was most recently manager of marketing research in the commercial development department. . . . A. KENNETH STEWART has been named general manager of Bendix Corporation's abrasives division in Jackson, Michigan.

1951

ROBERT W. BALDWIN is currently employed by the New York Division of AMF Incorporated, York, Pa., as a sales representative. . . . DEXTER E. CATE, a former electrical engineer with Raytheon in Portsmouth, R.I., manages a new branch of The Reed Elwell Real Estate Agency in Tilton, N.H. He received his New Hampshire realtor's license last November. . . . NORRIS H. COREY has been advanced from system operator to chief system operator at the REMVEC Facility of the New England Electric System. He was one of the original system operators at the facility. . . . THOMAS A. McCOMISKEY has been appointed as manager of construction in the western district of Bethlehem Steel Corporation's fabricated steel construction department. In his new position he will be headquartered at the firm's Pinhole Point fabricating works near Richmond, Calif. Previously he had been project engineer in Bethlehem Steel's Central erection district in Leetsdale, Pa. . . . Capt. CHARLES G. DARRELL, USN, is director, underseas programs, Office of Naval Research, Arlington, Va. . . . THEODORE A. MELLOR serves as quality assurance manager for Riley Stoker Co., Worcester, Mass.

1952

HAROLD R. ALTHEN works as general sales manager for the Cochrane Division of the Crane Co. in King of Prussia, Pa. . . . RICHARD H. ENGLUND now serves as pastor of the Church of Our Saviour (Evangelical Lutheran) in Fond Du Lac, Wis. . . . ROBERT C. HENEGAN is manager of engineering in the Capacitor Division at General Instrument of Taiwan Ltd., in Taipei.

1953

DR. RAYMOND P. PORTER has accepted a position with Acushnet Co., New Bedford, Mass.

1954

DAVID F. GILBERT is works manager for E. I. du Pont De Nemours & Co., Montague Works, Montague, Mich. . . . DUDLEY REDDEN, Holliston (Mass.) assessor of taxes, has announced that he will seek the Democratic Party's nomination for State Representative of the 41st Middlesex District which encompasses the towns of Sherborn, Ashland, Hopkinton and Holliston. Redden is a professional land surveyor and holds registration in Massachusetts, Connecticut, Vermont, Maine, and Ohio. He is a vice president and a member of the board of Schofield Brothers, Inc., land surveyors and civil engineers of Framingham. . . . WALTER A. REIBLING has been named plant manager at General Machine Shop, Fall Brook Plant and Components, Inc., a subsidiary of Corning Glass Works, Corning, N.Y. He has been production superintendent at the plant since 1970. He joined the company in 1964 as a senior equipment engineer at Wellsboro, Pa., where he was named supervisor of equipment engineering in 1965. In 1967 he was named plant manufacturing engineer at the Parkersburg, W. Va., plant.

1956

PAUL A. CNOSSEN has purchased an independent hardware store, Center Supply, in Uxbridge, Mass. The business supplies hardware, paint, plumbing and other products to the public as well as servicing local industries on a six-day-per-week basis. . . . JOHN K. DERBY holds the post of assistant manager of manufacturing at Staley Chemical Division, Marlboro, Mass. . . . JAMES L. FORAND is a self-employed consultant-transit in Kresgeville, Pa.

1957

DR. RENE R. BERTRAND was one of the authors of the article, "Sampling and Analyzing Air Pollution Sources" in the January issue of the magazine *Chemical Engineering*. Rene is a senior research chemist with the Government Research Laboratory at Esso Research and Engineering Co., Linden, N.J. For the past two years he was project leader for a team defining the R&D needs in air-pollution-measurement techniques and the market for air-pollution instrumentation, under an Environmental Protection Agency contract. He is a member of the Air Pollution Control Association. . . . JOHN J. KELLY has

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joined the staff of the Grant Chemical Division of the Ferro Corporation, Baton Rouge (La.) plant. His prime responsibility is in the design, construction and operation of Grant's distillation facilities. He was formerly associated with Vulcan Materials, Olin-Matheson Chemical Corporation and Allied Chemical Corporation. . . . PHILIP L. ROTONDO works for Combustion Engineering, Inc., as a stress analyst in the nuclear department. . . . Maj. RICHARD A. STEVENS currently serves at Marine Corps Air Station, El Toro, Calif.

1958

ANTHONY J. DiGIOVANNI has been appointed general superintendent for Mystic Valley Gas Company in Malden, Mass. He joined Mystic Valley in 1960 as planning engineer after moving from NEPSCO in Worcester. He became distribution engineer in 1961 and assistant general superintendent in 1967. . . . BURTON L. KEELER is now a contract administrator for the General Electric Co. in Pittsfield, Mass. . . . Attorney ARTHUR P. McGOWAN, JR., of Canton, Conn., has become a partner in the Hartford law firm of Halloran, Sage, Phelon & Hagarty. A former employee of Electric Boat Division of General Dynamics Corp., he is a member of the Hartford County, Connecticut, and American Bar Associations. . . . WESLEY W. PINNEY serves as chief engineer, Royal Packaging Equipment Co., Maywood, N.J. . . . BERNARD PODBERESKY is manager of Business Operations at General Electric Co., Schenectady, N.Y.

1959

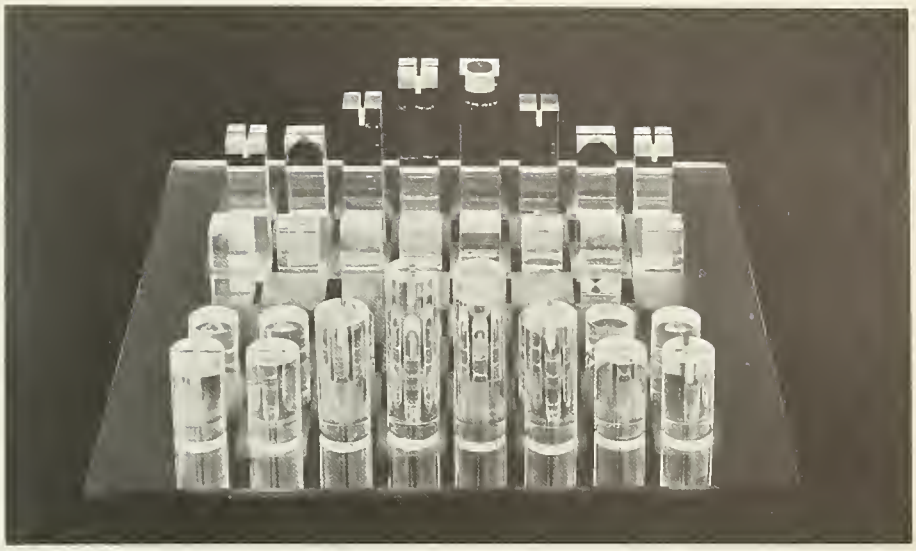
CARL M. FROVA is vice president of sales and marketing services, Universal Interloc, Inc., Santa Ana, Calif. . . . MORGAN M. WHITNEY, JR., is material utilization manager, Ford Motor Co., Dearborn, Mich.

1960

Married: ROBERT J. PAVANO and Miss Judith T. Barnhart on March 25, 1972 in Plainville, Connecticut. Mrs. Pavano is a supervisor of the business teaching department in a high school in Columbus, Ohio, where the couple resides. Mr. Pavano is a sales engineer with Borg-Warner Mechanical Seals Division.

MARTIN BECK currently works as a technical service representative for Cabot Corp., Seine, France. . . . PAUL M. BRYON is factory manager at Fisher Engineering Co., Rockland, Me. . . . WILLIAM F. HESTER holds a new position as manager-general administration at Turbo Power and Marine Systems, Inc., Farmington, Conn. He will have charge of all administrative functions for the corporation. Hester joined Pratt & Whitney Aircraft Division as an analytical engineer in 1960. After accepting a series of increasingly important engineering assignments in the analytical field, he moved into administration. He transferred to Turbo Power and Marine Systems in 1968. . . . JOHN S. REISINGER has been promoted to district equipment superintendent by the Southern New England Telephone Co., Manchester, Conn. He joined the firm in 1960 as an assistant engineer. . . . Worcester City Manager Francis J. McGrath has appointed NORTON S. REMMER to fill the position of plans inspector and senior building inspector in the Bureau of Public Buildings. The new inspector has an MS Degree from Oxford University in England where previously he served as a research and teaching assistant. For several years he has been a senior research engineer for Norton Co. . . . . STUART P. ROBERTS is a salesman with S & S Electronics, Inc., Chelmsford, Mass.

Hester



Whether it's creating a design for an Earth Week poster, a signage system, or a futuristic chess set, Robert A. Propper, '57, of the designing firm of Propper/Elman, New York City, can usually come up with a fresh idea.

Last year his designing firm created the green, black, and white Earth Week symbol which was adopted by New York State's Council of Environmental Advisors. His other design work includes: a sign system for the Memphis, Tenn. airport; book jackets for major publishers; and a limited edition plexiglas chess set which has been featured in *Industrial Design* magazine.

The chess set, entitled "Urban Gambit," has cut and polished plexiglas pieces and a mirrored glass board imprinted with squares.

Mr. Propper's photographic work has appeared in many publications including *The New York Times, Art in America, Art News, Architectural Forum, American Home, House & Garden,* Museum of Modern Art Bi-Annual Report, and Architectural League of New York publications.

In the past Propper has also worked as a design engineer (mechanical and electrical), technical writer and industrial photographer, and exhibition designer and photographer for the New Haven Redevelopment Agency.

Propper is currently teaching corporate design at Parsons School of Design, New York City. He graduated from Yale University's School of Art and Architecture with a BFA and MFA after receiving his degree in electrical engineering from WPI in 1957.

1961

EDWARD J. BAYON, '31, president of Tighe & Bond, Inc., consulting engineers, has announced the appointment of JOHN W. POWERS as associate with the Holyoke, Mass. firm. Powers joined Tighe & Bond as a project engineer in 1968 and has been responsible for design of civil engineering projects in the western Massachusetts area. He has been most recently responsible for the development of the design of Easthampton's waste water treatment program. Previously a sanitary engineer with the Naval Facilities Engineering Command in Boston, he supervised the operation of waste water treatment facilities for various naval installations in the area. . . . IBM Corp. of Des Plaines, Ill., employs PETER D. BEEKMAN, advisory industry marketing representative. . . . BRADLEY E. HOSMER, who now works for Marketing Action Group in Fairfield, Conn., as a consultant, has moved to Redding Center. His hobby is building and refinishing furniture. His wife, Jaunita, works out of their home as a free lance designer of infants' wear. . . . ALLAN MADNICK has employment as an elec-

tronic engineer with the Federal Government at Fort Monmouth, N.J. . . . JOHN A. MATLEY has been named senior systems analyst at Manufacturing Management Sciences, Burlington, Mass. . . . DR. GORDON M. PARKER is manager—R & D —for Akashi Lab., Honny Chemicals Co. Ltd., Akashi, Japan.

1962

JAMES L. FORAND, JR., recently received his MBA degree from Lehigh University. Jim is with Homer Research Laboratories, Bethlehem Steel Corp., Bethlehem, Pa. . . . DAVID L. GOODMAN has acquired an industrial electrical concern, Beaudreau Electrical, Inc. in Waterford, Conn. . . . KENNETH A. HOMON is now manager of sensor programs at IBM Corp., Gaithersburg, Md. . . . KENNETH C. KRIKORIAN is a professor at Quinsigamond Community College, Worcester. . . . LCDR (USN) BRIAN J. O'CONNELL, who received his master's degree in civil engineering at Stanford last year, is now executive officer of the Seabee battalion, Port Hueneme, Calif. . . . RONALD A. PENQUE has come up with a brand new recycling story. Protected by patents, Penque proposes to treat ordinary household garbage by chemical and mechanical means which will convert it totally into usable products. He plans to accomplish this without burning, without odor, without stream or air pollution. He says his Biocel process will produce such commercially marketable items as paper pulp, iron and steel, aluminum, glass, metals, fertilizer, and building products. The president of Biocel Corporation, he also owns the Land Chemical Company, Paterson, N.J. . . . Assistant Department of (Mass.) Public Works Commissioner, PAUL SHARON, has been appointed to serve as acting commissioner until a permanent replacement is found for retiring Harry P. Loftus. The acting commissioner is a member of the Mass. Registered Professional Engineer Society; Mass. Registered Land Surveyors; Notary Public; Municipal Engineers Assoc.; Highway Association; Metropolitan Area Planning Council, and Central Mass. Conference of football officials. . . . STEPHEN M. WELLS works for ITT as a senior systems consultant in New York. . . . The product manager for Webster & Martin, South Burlington, Vt., STANLEY M. WILBUR, recently was elected president of the Shelburne Jaycees.

SUCCESS IS SPELLED "1-2-3"

When Robert R. Cassanelli, '62, was a chemistry student at WPI, he probably never dreamed that in just a few short years he would be awarded a Patent for a prize-winning product that is currently being marketed coast to coast. Back then "Cass" was concerned with the "Tech News," the "Peddler," R.O.T.C. and his duties with Lambda Chi Alpha fraternity. He probably didn't think twice about the strawberry gelatin that was occasionally served with his meals.

During the past few years priorities have changed, and gelatin has concerned him virtually all of his waking hours. A group leader in the General Foods Jell-O research division, Tarrytown, N.Y., Cassanelli shares a patent for his work in the development of the popular gelatin dessert, "1-2-3."

He recalls that "1-2-3," a three-layered dessert (topping, chiffon, and gelatin), came about as sort of a happy accident, a laboratory curiosity. Somebody was whipping Jell-O with emulsified vegetable oil when it was discovered that a product had been created that developed its own topping. From then on ideas sprouted like mushrooms. Interesting textures were looked into and Jell-O was mixed with other ingredients.

Although chocolate is Cassanelli's favorite flavor, strawberry took precedence over it in the test product. (Jell-O has a water base that does not bring out the best in chocolate.) But strawberry is his second favorite flavor and that was the one that was used in the new product shown to the marketing new products committee.

With a go-ahead from marketing, small home-use tests were scheduled. Hundreds of consumers used the product and answered questionnaires. The consensus was that there should be more topping and that the dessert texture and taste could be improved. After the formula was changed slightly and other emulsifiers were evaluated, the product was resubmitted for more consumer testing. Still more improvements were suggested and made. Ultimately the dessert was named "1-2-3," production methods were established, and it was put into the hands of the marketing and advertising men.

When it came time for *Canner/Packer* magazine to give out its seventh annual New Foods Awards, "1-2-3" received one of the top seven national prizes. "A tremendous innovation . . . a very unique approach to a simple everyday dessert," were some of the judges' reactions.

"I feel fortunate to have had a hand in working on something that made it," Robert Cassanelli says. ("1-2-3" has now successfully tempted the public palate in not only strawberry, but cherry, raspberry, orange and lime.)

He declines to report what he may have bubbling on the back burner at present; but he claims that if it is a hot dish it will definitely not be called the "Cassanelli Casserole."

1963

Born: To Mr. and Mrs. DONALD M. WOOD II, a daughter, Kara Yvonne, on August 12, 1971. Don, who is president of his own company, Wood's Marine Supplies, Inc., of Lake Park, Fla., is fast becoming the largest stocking dealer in Southern Florida for sailboats under 30 ft.

STANLEY J. BELCINSKI, JR., works as a quality control supervisor for the Massachusetts Steel Treating Division of Presmet Corp., Worcester. . . . DR. ROBERT M. DESMOND has just been made head of the mechanical engineering department at Rochester (N.Y.) Institute of Technology. . . . EDWARD J. KALINOWSKI now serves as a senior compensation analyst for Eli Lilly & Co., Indianapolis, Ind. . . . JAMES M. KELLY, JR., is sales engineer for the Dustex Division, American Precision Industries, Buffalo, N.Y. . . . Prof. JOSEPH R. MANCUSO has been appointed head of the Department of Management Engineering at WPI. He succeeds Dr. Albert J. Schwieger who is retiring after 42 years on the faculty. Presently Mancuso is completing work for his doctorate at the University of Massachusetts as well as teaching management subjects at WPI. He is also president of a management consulting firm, Applied Marketing, Inc., of Framingham, Mass. . . . DR. ROBERT E. MURPHY serves as assistant astronomer and assistant professor of astronomy at the Institute for Astronomy, University of Hawaii. . . . DR. WILLIAM J. SAVOLA, JR., who received his Ph.D. in physics from the University of Connecticut last year, is currently working for his MBA at New York University.

1964

Married: DAVID O. ADAMS to Yvonne L. Alexandre in Ogunquit, Maine, on January 29, 1972. Mrs. Adams, who attended Boston University, is a secretary at MIT in Cambridge. David is with Sikorsky Aircraft in Stratford, Conn. The couple resides in Newtown, Conn. . . . PETER DORNEMANN to Miss Penelope Hebberd of Boston, Mass. on October 23, 1971.

NEED A JOB?

Don't forget that the resources of the WPI Placement Office and the Alumni Association are available to you. Contact Warren B. Zepp at WPI for information.

Born: To Capt. and Mrs. ELLIOT F. WYNER their second child, a son, Robert Harris, on April 8, 1972. Wyner has been working at the U.S. Army Natick Laboratories since his return from Korea.

ALBIN A. HASTBACKA has been chosen to receive RCA's Engineer of the Month Award at the RCA Aerospace Systems Division, Burlington, Mass. He received the award in recognition of his outstanding work as the system architect of a command and control computer system for the Air Force. The approach that he developed was a major factor in RCA's receiving a multi-million-dollar contract. Hastbacka is a leader, Technical Staff, in the Command Control Program Management Office. . . . RICHARD F. HEALING is with Frank Healing & Son, Easton, Conn. . . . JOHN C. RYDER, who since 1969 has been a senior engineer in advanced tire engineering at The Firestone Tire & Rubber Co., Akron, Ohio, has been promoted to supervisor of private brands tire engineering. . . . DR. DAVID H. LAANANEN serves as a project engineer-aviation safety at Dynamic Science, Phoenix, Arizona. . . . WALTER E. LANKAU, JR., is senior management scientist at Management Decision Systems, Waltham, Mass. . . . PETER MARSTON has been named engineer-electric operations in the Connecticut Light and Power Company's Willimantic district. Marston joined the firm in 1964 as cadet engineer and was appointed junior engineer in 1965. In 1966 he was transferred to the Berlin office, later being reassigned to the Willimantic office in 1968 as assistant engineer. . . . MASON H. SOMERVILLE received his Ph.D. in mechanical engineering from Pennsylvania State University in March. . . . GERALD E. TAMMI is now manager-automotive product engineering at Fairchild Semiconductor, Mountain View, Calif. . . . SEYMOUR WILLIAMS III is a project programmer for Leeds & Northrup, North Wales, Pa. . . . DR. ROBERT A. PEURA, WPI assistant professor of biomedical and electrical engineering, will read his paper, "The Measurement of In Vivo Tissue Transfer Functions by Cross Correlation Techniques as it Pertains to the EKG Conduction System" which he prepared with STEEN HANNIBAL (MS, '72), at the Third International Conference on Medical Physics in Gothenburg, Sweden, July 30-Aug. 4.

1965

DONALD C. CARLSON is bearing engineering coordinator, International Division, Torrington Co., Torrington, Conn. . . . ALLEN H. DOWNS is an electrical engineer at Electronic Instrument and Specialty Corp., Winchester, Mass., where ROBERT A. PAINTER, '43, is president. Al says to be sure and report, "Al Downs finally graduated—with the Class of 1971!" He also writes, "While a student I looked forward to graduating, but from the outside looking back in, I miss WPI." . . . Area engineer for the construction division of the engineering department of the Du Pont Co., Washington, W. Va., is GLENN P. HURST. . . . JAMES B. KNITTER is one of three persons who founded a new company, Trimetrix, Incorporated on March 1, 1972 in Norwood, Mass. Knitter, who serves the company as vice president of engineering, is well known for his innovative analog circuit designs used in over 36 successful modular and instrument products. He has authored several technical articles and has two patents pending. His previous positions include manager of analog design, Intronics, Inc.; design group leader, Teledyne Philbrick Co.; project engineer, Nexus Research Co.; and circuit designer, Block Engineering Co. . . . HENRY A. SCHNECK has employment as a civil engineer in the planning division with the Suffolk County Department of Public Works, Long Island, N.Y.

1966

Born: To Mr. and Mrs. SIGMUND S. DICKER, their first child, a daughter, Lori Michele, on April 16, 1972. Sig is a project manager for Diesel Construction Co., New York City. . . . To Mr. and Mrs. J. GARY DYCKMAN a daughter, Jennifer Anne, on August 8, 1971. Gary is an engineer in the structural division of Stone and Webster Engineering Corp., Boston. The Dyckmans recently purchased a home in Burlington, Mass. . . . To Mr. and Mrs. DONALD W. PETERSON, JR., a son, Kyle Kirby, in September of 1971. Don is a systems engineer with IBM. . . . To Mr. and Mrs. LAWRENCE A. PENONCELLO, a son, Jamie Lawrence, on May 1, 1972. Larry is a general foreman at the Torrington Co., Torrington, Conn.

L. THOMAS BENOIT is treasurer and sales manager of Flame Treating and Engineering Co., West Hartford, Conn. . . . JOHN W. BENSON II is with U. S. Electrical Motors, Milford, Conn. . . . Presently employed at the Electromagnetic Compatibility Analysis Center in Annapolis, Md., is JOHN D. CUTHBERTSON. . . . ANDREW J. FISH, JR., is now a Captain in the U.S. Air Force. . . . GEORGE H. FLYNN is with Sanders Corp., Nashua, N.H. . . . DR. JOHN H. LAUTERBACH currently serves as a project supervisor for the Central Technical Evaluation Group, National Starch & Chemical Corp., Plainfield, N.J. . . . PAUL R. LINDBERG of Augusta, Me., is self-employed as a free-lance writer. . . . HUGH R. McMENAMY is project engineer for Esso Research & Engineering, Florham Park, N.J. . . . JOHN P. SEFERIADIS has employment as a senior civil engineer with the New Bedford (Mass.) Department of Public Works. . . . Professor JOHN D. SHERRICK, who has been on the faculty of Schenectady (N.Y.) County Community College since 1970, has been promoted to associate professor in the department of science, mathematics and technology. . . . Mobil Oil Corp., Waltham, Mass., employs RONALD A. TATA as district engineer in the Springfield area where he also resides. . . . DOUGLAS L. VIZARD recently received his Ph.D. in biophysics from Pennsylvania State University where he pursued a DNA sequence study in the field of molecular biology. Currently residing in Houston, Tex., he is a postdoctoral fellow in the department of physics at the M. D. Anderson Hospital and Tumor Institute.

1967

Married: JOSEPH F. KIERONSKI and Miss Roberta Page, February 19, 1972 in Middletown, Connecticut. The bride teaches mathematics at Pinkerton Academy, Derry, N.H. The groom is a civil highway engineer with the Highway and Bridge Division for the New Hampshire Department of Public Works. . . . JOHN E. ROGOZENSKI, JR., and Judith Ann Fuller on April 22, 1972 in Medfield, Massachusetts. The bride is a graduate of Colby Jr. College. Her husband received a degree from the University of Massachusetts Graduate School last year.

Capt. HERBERT R. BROWN, project engineer with the 6511th Air Force Test Group (Parachute) at the El Centro Naval Air Facility (Calif.), has been named as the group's candidate for junior officer of the year award given annually by the Air Force Flight Test Center, Edwards Air Force Base. Officials said Capt. Brown was selected for this honor on the basis of his continuous, outstanding performance in directing the testing of the parachute systems to be used in the crew escape capsule on the Air Force's new B-1 bomber. . . . Capt. STEPHEN B. COTTER has been selected Outstanding Instructor in his unit at Moody AFB, Ga. A T-37 instructor pilot, he was honored for his effective teaching techniques and exemplary devotion to duty. He is assigned to a unit of the Air Training Command which provides flying, technical and basic military training for USAF personnel. . . . RICHARD E. De GENNARO is an MBA candidate at the Wharton School, University of Pennsylvania in Philadelphia. . . . RONALD S. GOSK was the author of an article concerned with pressurized ink writing for graphic representation of data which recently appeared in the magazine, "Industrial Research." Presently he is analog product manager for Mechanics for Electronics Corp. (MFE). . . . JOHN M. KUENZLER is a sales engineer with The Foxboro Company, Foxboro, Mass. . . . ROY P. LINDQUIST works as product engineer for Foxboro Company, Foxboro, Mass. . . . LEONARD E. ODELL, assistant actuary in the life actuarial department at Aetna Life & Casualty, Hartford, Conn., has been designated a Fellow in the Society of Actuaries upon completion of all the examinations.

RICHARD A. ORMSBEE has been employed by the Best Foods Research Center, Union, N.J. . . . STANLEY P. PIETREWICZ is systems engineer for Tenneco, Newport News, Va. . . . ROBERT E. RICHARDSON, JR., is an engineer at the Naval Weapons Lab., Dahlgren, Va. . . . SUDHIR A. SHAH has employment as senior structural engineer at James P. Purcell Associates, Inc., Hartford, Conn. . . . RICHARD SYMONDS is with Westinghouse Electric, Philadelphia, Pa. . . . NELSON F. (SKIP) THUNE

been studying. . . . JOHN S. SIMPSON to Miss Jeanne Marie Drapeau on July 1, 1972 in Tiverton, R.I. Mrs. Simpson is a teacher in the Portsmouth School System. Her husband is employed at the Naval Underwater Systems Center in Newport. . . . FRANCIS W. SKWIRA to Miss Gerald Carreker Fowler on June 24 in Atlanta, Ga. The bride has received a master's degree in French literature from Emory University in Atlanta. The groom is employed by the General Electric Co., San Jose, Calif.

RICHARD D. ALPERT is on sabbatical leave in Europe. . . . STEPHEN R. ANDRUCHOW is a construction engineer for Stephen Andruchow, Inc., West Warwick, R.I. . . . DAVID W. EATON serves as systems programmer for General Electric Company, Phoenix, Arizona. . . . THOMAS C. GURNEY is a student at Central Bible College, Springfield, Missouri. . . . ROY C. JOHNSON, JR., recently received his PhD in civil engineering from Rice University, Houston, Texas. . . . PHILIP M. KAZEMERSKY is a nuclear engineer for the Tennessee Valley Authority in Chattanooga. . . . Z. RONALD STELMAK serves as a sales engineer for Westinghouse and is currently located in Syracuse, N.Y. . . . MICHAEL W. NOGA has employment with Stone & Webster, Boston. . . . CARL NOTHNICK is with Westinghouse Electric, Baltimore, Md. . . . STEPHEN R. PHILLIPS is completing his thesis for his MS in industrial design at the Institute of Design, Illinois Institute of Technology.

GREGORY E. POLLACK is assistant marketing manager in the micrographic division of Canon USA, Inc., Lake Success, N.Y. . . . GERALD M. ROBBINS is a graduate student in the department of landscape architecture at the University of Illinois. . . . RONALD P. ROSADINI is a teacher in the Torrington, Conn. School System. . . . ROBERT J. SCOTT is a graduate student in city and regional planning at Cornell University, Ithaca, N.Y.

NEIL M. GLICKSTEIN has been appointed math-science teacher at Home Base School, Watertown, Mass.

1970

Married: A. PATTON ABBE II to Miss Christine Driscoll on May 28, 1972 in Windham Center, Connecticut. Abbe is the owner of Keats Krafts Clothing Store in Mystic, Conn. His bride is employed as a model for the portrait painter, Robert Brackman, N.A. of Noank, Conn. . . . RICHARD F. ABRAMS to Miss Jean M. Parker on June 10 in Spencer, Mass. The bride is an elementary art teacher in the Spencer schools. Her husband is with Artisan Industries, Waltham, Mass.

Married: MARK E. BROWN and Miss Carolyn Marie Gilbertson June 17, 1972 in Battle Lake, Minn. Mrs. Brown has completed graduate studies in social work at Washington University, St. Louis. Mr. Brown is a candidate for a doctorate in chemical engineering at the University of Minnesota, Minneapolis. . . . RALPH DiIORIO to Miss Rosemary Calcagno in Seaford, N.Y. on June 3. Ralph is a senior engineer for ATT Long Lines Department. . . . DUNCAN H. GILLIES and Miss Patricia M. Teczar on July 7, 1972 in Worcester, Massachusetts. The bride teaches at Union Hill School. The bridegroom is with the Massachusetts Electric Co. . . . ROGER P. HENZE to Miss Judy Lynn Welch in North Adams, Massachusetts on July 15, 1972. Mrs. Henze is a student at North Adams State College. Mr. Henze is a candidate for his master's degree in city and regional planning from Cornell University this year.

KENNETH C. BASSMANN, who was recently promoted to first lieutenant in the U.S. Air Force, has received an award for a military improvement suggestion which he gave at Andrews AFB, Md. He is a communication-electronics officer with the Air Force Communications Service. . . . 2/LT. GERRY A. BLODGETT has completed a nine-week ordnance officer basic course at the Army Ordnance Center and School, Aberdeen Proving Ground, Maryland. . . . JAMES HANNOOSH was awarded a master of science degree in mechanical engineering from MIT last June. He has been accepted for the doctoral program in the field of material behavior at MIT. . . . JERRY L. JOHNSON, who received his MS from Holy Cross this year, is starting his PhD program at Dartmouth College, Hanover, N.H., this fall. . . . PETER F. LALOR was recently awarded his master's degree in metallurgy from the University of Connecticut. . . . JOHN J. LYONS is a systems programmer for WPI. . . . KALVIN W. NGOON is a programming trainee at State Mutual Life Assurance Co., Worcester. . . . 1/LT. DENNIS L. NOVAK has completed the four-week Army Alaska Summer Leader's Course at the Northern Warfare Training Center, Ft. Greely, Alaska. He is a platoon leader at Ft. Wainwright, Alaska. . . . GEORGE E. PHILIPPON has been named systems manager, Identicard division of Management Service Associates, Lancaster, Pa. . . . ROSS A. WILLOUGHBY is a sales representative for Air Way Sales, Worcester.

LAURENCE P. VALLEE has received his MS degree in civil engineering from the University of Connecticut. He has accepted a position with the structural firm of Stone and Webster Engineering Corp., Boston.

1971

Married: ANTHONY SCHEPIS to Miss Laura Candace Fabrizio in Quincy, Massachusetts on May 21, 1972. Mrs. Schepis, a graduate of Forsyth Dental School and Northeastern University, is employed as a dental assistant. Her husband is an industrial engineer at Sealy Mattress Co., Randolph, Mass.

Married: DAVID P. BUELOW and Miss Helen M. Laptewicz on June 10, 1972 in Westboro, Massachusetts. Mrs. Buelow is a graduate of Salter Secretarial School, Worcester. David is with the U.S. Army Corps of Engineers in Waltham. . . . STEVEN G. EMERY to Miss Mary Evelyn Jackman July 15, 1972 in New Haven, Connecticut. The bride is a registered nurse with the Visiting Nurse Association of Worcester. The groom is in the cardiology department at St. Vincent's Hospital, Worcester. . . . ROBERT P. HART and Miss Elizabeth T. Cushwa on July 8 in South Hadley, Massachusetts. Mrs. Hart is a graduate of Framingham State College. Her husband is a design engineer at Norden Company, Norwalk, Conn.

Married: DOUGLAS E. HOLMES to Miss Christine F. Holda on June 24, 1972 in Worcester, Massachusetts. Mrs. Holmes is a kindergarten teacher. The groom is a graduate student in the material sciences division of the University of Connecticut, Storrs. . . . JEFFREY P. LASSEY and Miss Lynne K. Maniero on June 25, 1972 in Worcester. The bride, a graduate of Worcester State College, is a teacher. Her husband is with New England Electrical Co., Weymouth, Mass. . . . EDWARD C. LOWE, III to Miss Judith S. Cogswell on July 8, 1972 in Longmeadow, Massachusetts. Mrs. Lowe is a French teacher. The bridegroom is a sales engineer employed by General Electric of Schenectady, N.Y. . . . 2/LT. PETER J. MARKUNAS and Miss Victoria R. Chicoine on May 13, 1972 in Leicester, Massachusetts. Mrs. Markunas is a graduate of Ward Business School. Her husband is a candidate for his master's degree in mechanical engineering at WPI. . . . SPAFFORD A. MARTINDALE, JR. and Miss Betteanne Mitchell in Worcester, Massachusetts. The bride is an alumna of Anna Maria College.

Married: VINCENT T. PACE and Miss Maryann Bagdis on June 10, 1972 in Grafton, Massachusetts. DONALD TANANA and FRANK STEINER were ushers. Maryann, a former WPI student, is a senior at Drexel Institute of Technology in Philadelphia. Her husband is an electrical engineer at Philadelphia Electric Co. . . . RICHARD B. HOPEWELL to Miss Claudia Louise Secrist July 1, 1972 in Needham, Massachusetts. Mrs. Hopewell is a music education teacher. The bridegroom is doing graduate work at WPI. . . . NORMAN W. SOUSA, JR., to Miss Barbara K. Phillips on July 1, 1972 in Pearl River, N.Y. EDWARD J. SHERMAN was best man. The bride is a Becker Junior College graduate. Her husband is with the Sousa Corp., West Hartford, Conn. . . . PAUL R. SWENSON and Miss Elaine M. Zoppo on June 24, 1972 in Paxton, Massachusetts. Mrs. Swenson, a graduate of Becker Junior College, is a senior at The Memorial Hospital School of Nursing. The bridegroom is a field engineer for Granger Contracting Co., Worcester.

Married: JOHN ANDERSON and Miss Josephine Vanni in April in Ho-Ho-Kus, New Jersey. Mrs. Vanni is a graduate of Newton College of the Sacred Heart, Newton, Mass. Her husband is with Public Service Electric and Gas Co., Newark, N.J. EDWARD "NED" CUNNINGHAM was best man. Ushers were GARY MASON, PAUL RUSSO, and ROBERT KELLEY.

CHIA-SOON KU is a graduate student in the Department of Chemical Engineering, Pennsylvania State University, University Park, Pa. . . . ALAN SHAPIRO, who is currently home on leave from his duties with the Peace Corps in Ecuador, expects to return soon to finish out his two-year enlistment. Recently a full page of photos he took in that South American country was published in the *Transcript*, North Adams, Mass.

PAUL B. ASH has earned his master of arts degree in teaching, with an education major, from the University of Massachusetts at Amherst. . . . THOMAS R. BALL is employed by Astra Pharmaceutical Products, Inc., Worcester, in the area of data computer-research and development. . . . MICHAEL J. GRADY is a software systems engineer at Honeywell Information Systems, Inc., Cambridge, Mass. . . . UMBERTO MILANO is with the U.S. Bureau of Reclamation, Denver, Colo. . . . MARTYN H. STRONG has received his master of engineering in electric power engineering at RPI, Troy, N.Y. He is returning to RPI this year to study for his master's degree in environmental engineering. . . . JAMES E. TROUTMAN, JR. is currently a computer instructor at Lowry AFB, Colo.

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1972

Married: GARY A. FOOTE and Miss Catherine E. Bogard on May 27, 1972 in Worcester, Massachusetts. The bride is a graduate of the University of Connecticut. . . MICHAEL W. THAYER to Miss Cynthia Ellen Roff last spring. Mrs. Thayer graduated from Wheaton College. . . . PETER A. BERTASI and Miss Janet A. Juzwinski in New Britain, Connecticut on June 17, 1972. The bride has been studying for her BS degree in education at Central Connecticut State College. The bridegroom is a graduate student in business administration at the University of Rochester, N.Y. . . . DOUGLAS E. BEST to Miss Claudia J. Taylor in East Longmeadow, Massachusetts. Mrs. Best attended Salem State College and graduated from Chandler School for Women, Boston. Her husband is employed by Heald Corp., Worcester.

Married: CHARLES J. BRINE and Miss Patricia Ann Rimo on June 3, 1972 in New Brunswick, N.J. The bride is an alumna of Douglass College in New Brunswick. Both he and her husband plan to attend graduate school. The groom expects to enter the College of Marine Studies (Chemical Oceanography) at the University of Delaware where he will enroll in the PhD program. . . . MARK C. DUPUIS and Miss Karen F. Fitzgibbon in Lunenburg, Massachusetts. Mrs. Dupuis graduated from Fitchburg State College. The groom is in production management at Procter and Gamble in Quincy, Mass. . . . LOUIS A. FERRARESI, JR., to Miss Susan Ann Jones on June 18, 1972 in Worcester, Massachusetts. Mrs. Ferraresi graduated from Emmanuel College, Boston. Her husband is a controls-systems engineer for Stone & Webster Engineering Corp., Boston. . . . GEORGE A. OLIVER and Miss Barbara Frances Davis on June 10, 1972 in Bedford, Massachusetts. The bride is a graduate of Westfield State College. The bridegroom is attending California Institute of Technology, Pasadena. . . . DONALD J. POLONIS and Miss Patricia Ann Theresa Yarusawych in Easthampton, Massachusetts on June 10, 1972. The bridegroom has accepted a teaching fellowship at Union College, Schenectady, N.Y., where he is working for his master's degree in operations research in the School of Industrial Administration. . . . MARCELLO A. RANALLI to Miss Diane Rose Bianco on June 10, 1972 in Worcester. Mrs. Ranalli is a casualty rater at Travelers Insurance Co.

JOSEPH BIANCA is working for Combustion Engineering, Windsor, Conn. He is a research and product development engineer in the company's Kreisinger Development Laboratory. . . . ROBERT A. COLP is a graduate student at the University of Wisconsin, Madison. . . . Currently DR. RAYMOND M. FISH is employed by the National Institute of Health in Bethesda, Md. . . . ANDREW J. GLAZIER is with the U.S. Army Corps of Engineers. . . . ROBERT L. LYONS is with the field service support group at Leeds & Northrup Co., North Wales, Pa. . . . FRANK D. McMAHON has employment as a sales trainee for W. R. Grace, Pontiac, Mich. . . . ROBERT I. PARRY has accepted a position with the Philadelphia Electric Company.

ROBERT M. PASUCCI is a transportation planner at Raymond, Parish, & Pine, White Plains, N.Y. . . . JEFFREY A. PETRY is with the Torrington Company, Torrington, Conn. . . . GARY E. RAND serves as an associate engineer at Raytheon Co., Wayland, Mass. . . . W. J. Megon & Co., Naugatuck, Conn., employs EDWARD D. SCHRULL as assistant project manager. . . . WALTER J. SMITH was commissioned an ensign in the U.S. Navy Reserve in September. He has been at the Naval Officer Training Center in Newport, R.I. . . . KENNETH R. WADLAND is a graduate assistant in the math department at the University of New Hampshire.

ROBERT M. BYRNE has employment at The Gazebo, Torrington, Conn. He is also president of the Torrington Men's Choral Club. . . . ROBERT S. AMES plans to do graduate work in mathematics at Syracuse University this fall. . . . GLENN E. CABANA has been employed by Western Electric, North Andover, Mass. . . . DOUGLAS B. HARRINGTON is a technical marketing program trainee at the General Electric Company. . . . JOHN D. KALETSKI holds the position of manager at Clairol, Stamford, Conn. . . . WALTER R. McILVEEN serves as a designer for Walter McIlveen Associates, Avon, Conn. . . . JOHN C. MOORE is a field service engineer for the power division of Westinghouse, Minneapolis, Minn. . . . Uniroyal Chemical Division, Naugatuck, Conn., employs THOMAS A. REYNOLDS as a process engineer. . . . MARK F. SAMEK is a graduate student at WPI. . . . LESLEY E. SMALL has employment as a staff engineer for the Southern New England Telephone Co., New Haven, Conn. . . . THOMAS J. TRACY is with Stone & Webster, Boston, Mass. . . . LT. STEPHEN A. WILKINSON expects to be assigned to Ft. Bragg, N.C. . . . WALTER L. BALLARD recently joined Eastman Kodak Company, Rochester, N.Y. and has been assigned as a development engineer with the Apparatus Division. . . . JOHN G. CROFT, JR., SIM, is assistant purchasing manager, Wyman-Gordon, Worcester. . . . HENRY E. HIRVI, SIM, is a project leader at Cincinnati Milacron-Heald Corp., Worcester. . . . GUS L. SANNICANDRO, SIM, serves as engineering design supervisor for Fenwal, Inc., Ashland, Mass.

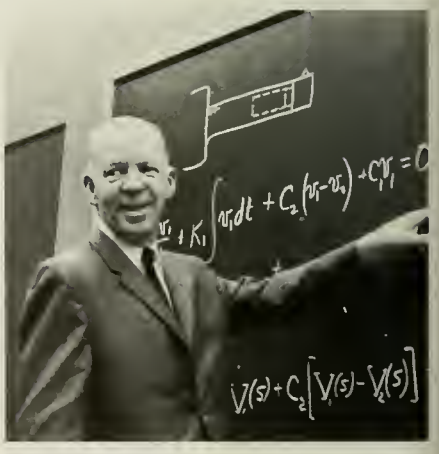
HOWARD H. LEVINE is in the department of physics at the University of Illinois. . . . JEFFREY ASKANAZI is a medical student at Upstate (N.Y.) Medical Center. . . . RICHARD J. WALLACE is studying at WPI. . . . KURT M. WUSTERBARTH has accepted employment at the Goodyear Tire & Rubber Co.

of Engineering.... JAMES G. GARRAHAN started work in March as an analyst for the Computer Sciences Corporation in the Software Application Division. He is closely concerned through a company contract with the Goddard Space Flight Center. In this capacity he uses celestial mechanics to investigate problems that a satellite in a synchronous orbit might incur before the 1973 actual launch date. He is a supporting member of the launch team. . . . LEO R. GILLIS, JR., is an engineer in training at New England Power Co., Westboro, Mass.

DOUGLAS E. HOLMES, who is working for his Ph.D. at the University of Connecticut, is a teaching assistant in the chemistry department. . . . RICHARD B. HOPEWELL is studying for his master's degree at WPI. . . . Airman LOUIS R. HOWAYECK has graduated from the U.S. Air Force supply inventory specialist course conducted by the Air Training Command at Lowry AFB, Colo. The airman, trained to inventory supplies by use of electronic data processing machines, is being assigned to Otis AFB, Mass., for duty with a unit of the Tactical Air Command which provides combat units for air support of U.S. ground forces.... ERNEST R. JOYAL is an engineer in training at the Naval Ship Engineering Center, Hyattsville, Md. . . . STEPHEN P. KATZ is employed as a special projects supervisor at Beechmont, Inc., Canajoharie, N.Y. In the evenings he attends Union College where he is in the Industrial Administration Department.... DOUGLAS A. KEILY is with the Department of Environmental Protection, Hartford, Conn. . . . DANIEL F. KING works as a junior chemist for New England Nuclear Corp., Boston. . . . MICHAEL S. LATKA is fire prevention engineer for Kemper Insurance Co., Boston. . . . WILLIAM G. LIGHT, who is studying for his master's degree in chemistry at the University of California, Berkeley, expects to start on his Ph.D. in environmental health sciences in the fall of 1972.... Currently CLAUDE P. MANCEL is a graduate student at WPI. . . . Sister DONALD MARIE SSJ is head of the Mathematics Department at St. Peter's Central Catholic High School, Worcester. . . . RICHARD J. MATTES, associate engineer, works for New England Telephone, Boston.

ROBERT A. PACE currently holds the position of design engineer at Electric Boat, Groton, Conn.... PAUL T. POSCO studies as a graduate student at Cornell University.... Gordon Library, WPI, employs NORMAN D. POWERS, programmer. . . . Army Specialist Four JOHN R. PRATT recently completed with honors a 28-week tactical microwave systems repairman course at the Army Signal School, Ft. Monmouth, N.J. . . . Airman 1/c GORDON R. PETERSON has been named Outstanding Airman of the Quarter in his Unit at Croughton RAF Station, England. Peterson, an electrical systems repairman, was selected for his leadership, exemplary conduct, and duty performance. . . . EDWARD J. SHERMAN, JR., is in the Air Force. . . . PAUL B. SULLIVAN is with Western Electric Co. (Bell Labs), Madison, N.J.... CALEB H. THOMAS, JR., is associated with Mohawk Data Sciences, East Herkimer, N.Y. . . . Airman JAMES E. TROUTMAN, JR., has completed basic training at Lackland AFB, Texas. He has been assigned to Keesler AFB, Miss., for training in communications electronics systems.... Dr. RICHARD A. TUFT, who has been a senior member of the technical staff at RCA, Burlington, has been appointed assistant professor of physics at WPI. Dr. Tuft received his doctorate in physics from WPI last year.... KENT VAN HEUKELOM serves as a teacher aide in Central Falls, N.Y. . . . 2/Lt. PETER B. WELLES has completed a nine-week ranger course at the U.S. Army Infantry School, Ft. Benning, Ga.

Engineering . . . . for a world in need



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WPI journal
OCTOBER, 1972 / VOL. 76, NO. 3

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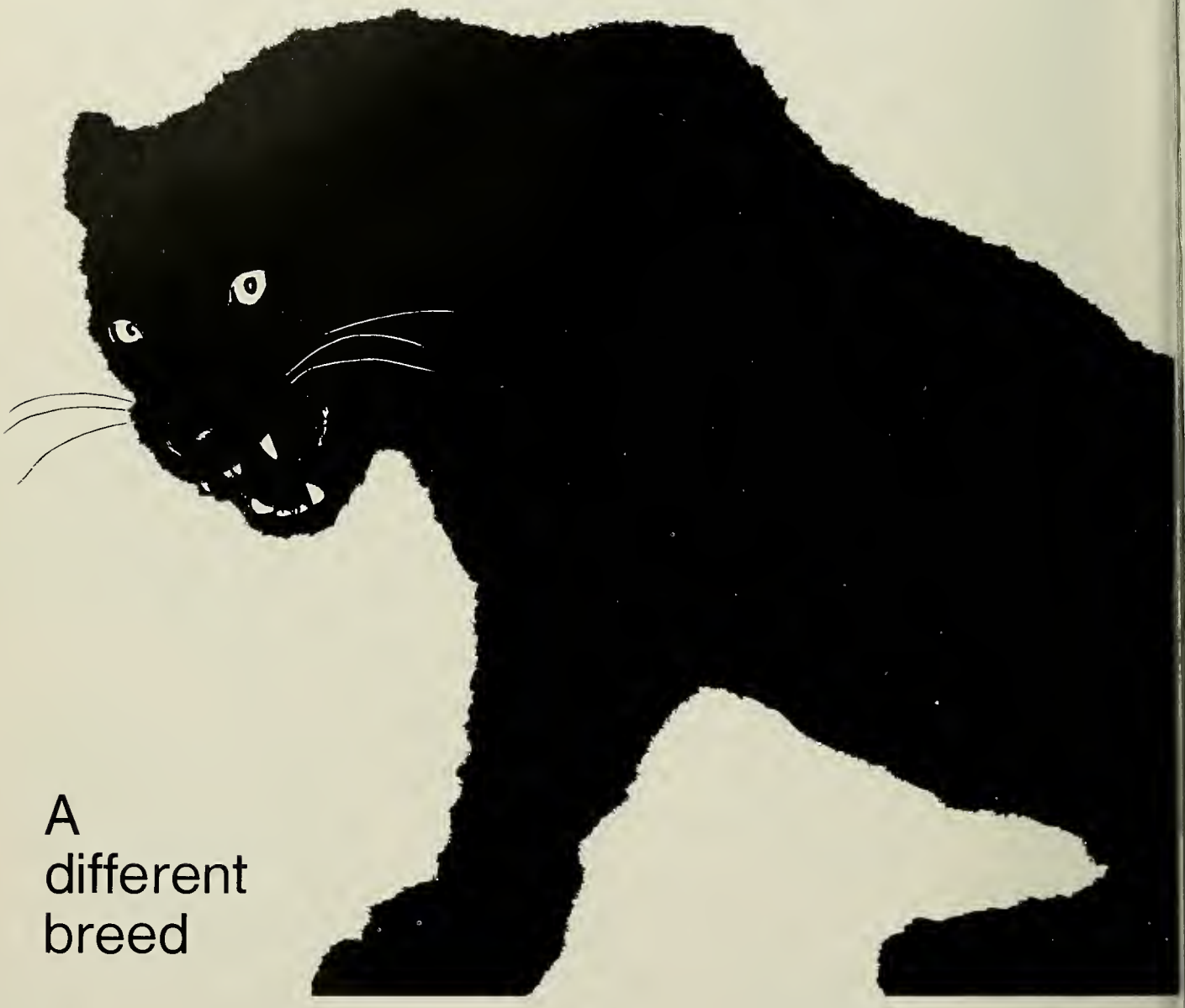

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WPI journal

Vol. 76, no. 3
October, 1972

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A Decade of Progress Complete

by Roy A. Seaberg, Jr., '56

PRIDE IN OUR PAST, FAITH IN OUR FUTURE was the slogan which keynoted the Centennial Fund program announced in 1963. Most WPI alumni probably remember that three-year drive. And most have by now probably forgotten that the Centennial Fund was only the beginning phase of a ten-year, $23 million development program.

Well, we'd like to bring you up to date. As of now, the original program has met and surpassed its goal by $500,000, and it did it a year ahead of schedule.

Beginnings and New Beginnings

"Although we formally kick off the Centennial Fund tonight," said Fund Chairman Philip M. Morgan in 1964, "we do so with quite a running start. We begin our efforts with a head start of $3,085,869.90." That $3 million was to grow to $15,400,545.65 before the Centennial Fund was concluded in 1967. The originally announced goal for the three-year program had been $15 million.

"We begin our efforts with a head start.

— Philip M. Morgan

This past June, Milton P. Higgins, chairman of the WPI Board of Trustees, announced the completion of the ten-year program. "The faith that Phil Morgan and all of us had in 1964 when we set out upon this task has been renewed again," said Higgins. "As we plan for the next ten years we can do so with increased confidence that the progress of the past decade has placed WPI in a secure but not complacent position. Our slogan for the Centennial Fund was 'Pride in our Past, Faith in our Future.' It would seem that we were entirely justified in that faith."

The Accomplishments . . .

The original ten-year plan was WPI's most ambitious undertaking. Under it, the following achievements were realized:

- Four new buildings were built on campus (the George C. Gordon Library, the Harrington Auditorium, the Alden Research Laboratories' Building Number One, and the Stoddard Residence Center)
- Four new faculty professorships were endowed (the George I. Alden Professor of Engineering, the George F. Fuller Professor of Mechanical Engineering, the Harold J. Gay Professor of Mathematics, and the Leonard P. Kinnicutt Professor of Chemistry)
- Improvements were made to eighteen existing campus buildings and other facilities (including major renovation to Daniels Commons, Alumni Field, Salisbury Laboratories, and most of the previously existing departmental libraries)
- Funds were set aside for increased endowment, faculty salaries, financial aid, and operational expenses.

And the Growth . . .

It has been a decade of unparalleled growth for WPI. At the June Trustees' meeting, President George W. Hazzard gave this breakdown:

- "WPI's enrollment grew from 1294 students (of whom 1191 were undergraduates and 103 were graduate students) to last September's figures which showed 1,945 undergraduates and 295 graduate students, for a total enrollment of 2,240 students." This represents an increase of 73 per cent.

- "The full-time faculty has grown from 124 to 170." This represents an increase of 37 per cent, and indicates that the student-faculty ratio has gone from 10:1 to 13:1 during the nine-year span.
- "The college's endowment has grown from $17 million to $28.9 million, including appreciation of funds." An increase of 70 per cent.

And the Problems . . .

With the growth, and with the economic and social changes that affected the late 1960s, WPI has experienced its share of related problems. At the conclusion of the Centennial Fund in 1965, President Harry Storke reflected: "We now have completed phase one, and for this we are all thankful. But where do we go from here? The most obvious fact which confronts us when we contemplate tomorrow from today is that our estimates of yesterday were less than adequate."

In the period 1967-1971, WPI along with virtually every college and university in the United States found itself in a position of deficit financing. To close the gap between income and expenses, a number of steps were taken. Budget controls were sharpened, fund-raising activities were stepped up, tuition was raised from $2,100 to its current $2,650, and a one-year moratorium on wage increases was instituted.

But these measures were simply not enough. As Chairman Higgins reported, nearly $1 million from the Centennial Fund was used for operational purposes prior to 1971. That money, originally intended as capital, had to be used to pay the bills.

As President Storke had noted in 1967 when he predicted these problems: "It's not that we were poor estimators, or that we were overcautious. . . It is simply, and I am sure that this comes as no surprise to any of you, that the pace of scientific progress in our world of today has accelerated beyond the ability of any of us to foresee three years ago. And equally, there is no one here today who does not fully understand that this accelerating pace of progress has been accomplished accompanied by escalating costs of the education of engineers and scientists."

The string of deficits, once begun, increased every year until it peaked at $398,007 in 1970. Last year, however, President Hazzard was able to announce in his annual report that "It was a turn-around year," and that while the college still showed a deficit it was only a small fraction of the preceding year's. Finally, at the close of the 1971-72 fiscal year the string was broken. For the first time in six years WPI has closed its books on black ink instead of red.

And the Changes . . .

Increased costs are easily pinpointed, but to eliminate them without lowering educational standards was not a very simple task or one very lightly undertaken. And so for this reason, perhaps more than any other (and there were indeed others!), President Storke appointed the President's Planning Committee in December 1968. Supported by more than $100,000 of WPI funds, the committee spent the next eighteen months in an extensive and intensive study to resolve the dilemma of providing an educational program of distinction at WPI which was at the same time economically feasible in the light of then-current and future financial resources.

The result was the WPI Plan, a landmark in American engineering and scientific education. The story of the Plan has been told elsewhere, as well as the support which it has attracted. The Plan is bringing about a much closer liaison with industry and government and should significantly improve the mutual respect among students, faculty, administration, and alumni. WPI Plan graduates will continue to combine the theoretical and the practical, which has been a hallmark of WPI alumni, and they will do it in a way uniquely fitted to the problems of the day.

"It's not that we were poor estimators, or that we were overcautious . . . It is simply that the pace of scientific progress has accelerated beyond the ability of any of us to foresee . . .

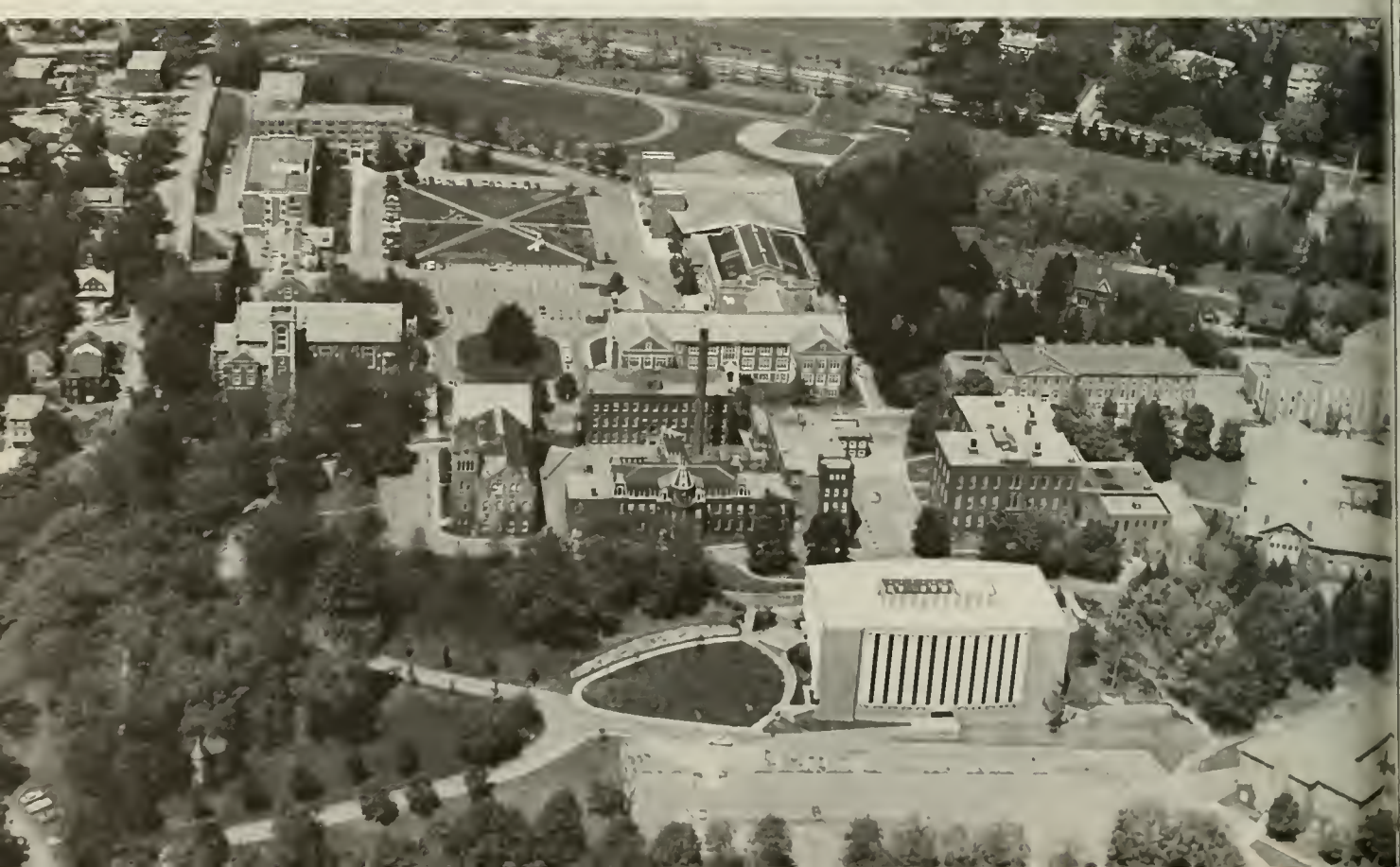
— President Harry P. Storke, 1967

THEN

The campus as it appeared a decade ago. The only exception is the Goddard Hall of Chemistry and Chemical Engineering, which does not appear in this photograph.

NOW

The campus today, showing the Gordon Library, Harrington Auditorium, and Stoddard Residence Center.



And the Changes Yet to Come . . .

WPI planning has been more than financial and educational. The Institute is now attacking the problems of using resources and facilities in the most effective way. In 1970 WPI commissioned Charles W. Moore Associates, architects and planners, to evaluate WPI facilities and make recommendations concerning the college's present and future problems of spatial planning. Their $50,000 report (underwritten by a grant from the George I. Alden Trust) was submitted in 1971. A trustee committee chaired by Paul Morgan, son of Philip Morgan who headed up the Centennial Fund, is now reviewing the Moore proposals.

"The Resources and Planning Committee," said Chairman Morgan, "is directing its studies toward better student center facilities and modifications of academic buildings to increase educational effectiveness, particularly in the light in anticipated learning-pattern changes brought about by the WPI Plan."

What amounts to the first step of the plans for the future was announced on Reunion Day in June, when Warren A. Ellsworth, '22, climbed onto a bulldozer and broke ground for the Ellsworth Residence, which will house 94 students in sixteen townhouse apartments. A gift of $250,000 toward this residence was made by the Ruth H. and Warren A. Ellsworth Foundation, and it nicely coincided with the fiftieth anniversary of Warren Ellsworth's graduation from WPI.

Warren A. Ellsworth, '22, breaking ground in style

Adjacent to the Ellsworth Residence on Institute Road will be the George Freeman Fuller Residence, made possible by a $250,000 gift from the George F. and Sybil H. Fuller Foundation. Fuller, a noted Worcester industrialist, former president of Wyman-Gordon, and an inventor with over 1,000 patents to his credit, was long a benefactor of the college.

Together, the Ellsworth and Fuller residences will house 196 students in 29 townhouse apartments and 11 efficiency units. This will go a long way toward alleviating the student-housing shortages at WPI. This new type of housing also will be available to married students and faculty.

WHERE IT CAME FROM

Business and Industry	$ 2,518,744
Alumni	8,210,491
Friends	5,517,722
Foundations	6,438,740
Government	1,116,333
Other	39,396
	$23,841,426

WHERE IT WENT

Endowment	
Professorships	$ 1,600,000
Scholarship Aid	1,400,000
Other Restricted	2,020,000
Unrestricted	7,300,000
New Buildings	7,400,000
Operations	
First Phase	1,440,000
Second Phase	2,640,000
	$23,800,000

An Optimistic Look Ahead

As WPI looks forward to its next ten years, there is a definite spirit of optimism which is shared by others. This spring the National Science Foundation awarded WPI $733,400, the largest grant ever given under its College Science Improvement Program. There was the $200,000 grant from the Sloan Foundation in 1970, $188,000 from the Carnegie Corporation in 1971, $40,000 from the General Electric Foundation in 1972, and the recently announced grant of $30,000 from the National Endowment for the Humanities. These independent judgments of WPI's educational leadership give confidence for the future.

"We intend to continue our efforts in the days ahead," President Hazzard recently said, "to insure that WPI will remain at the forefront of sound educational advancement." WPI is one of the few schools of its kind that can make that statement today. ■

"We intend to continue our efforts . . . to insure that WPI will remain at the forefront of sound educational advancement.

— President George W. Hazzard, 1972

Beyond the Bricks and Mortar

What New Buildings Mean in the Life of a College Community

FOUR NEW BUILDINGS were added to the WPI campus during the period 1967 to 1970. When they appeared, the story of the bricks and mortar was told — the pictures of construction, the costs, the fearless predictions of how wonderful things would be with the new facility. This article will not repeat those things. The proper questions to ask at this point in time, when all have been in use for several years, are: How has it all worked out? What difference has it made in the life and work of the people who use those buildings every day?

George C. Gordon Library

What was it like on campus before the Gordon Library was built? As Albert G. Andersen, Director of the library, puts it: "Well, we had departmental book collections which ranged from adequate to excellent. The one big problem was that there was no one to help the user with the material."

One may well ask just what is a modern library. It is certainly books and journals; these are a prerequisite. Although size is important, the quality of the collection is more essential than the number of volumes. According to Professor Andersen, the 110,000 volumes in the Gordon Library are a good representation of the degree work in engineering, sciences, and the humanities.

"Next in rank, and in some ways more important, is personnel," continues the director. "Unless a library has well-trained and informed librarians, no matter how fine a book collection, it cannot be fully utilized. Informed and willing librarians breathe life into the body of the book collection. It is essential that reference works, indexes, and abstracts be interpreted to the user. The professional librarian can suggest new paths in the discovery of information. Our Gordon Library staff is excellent."

Library No Longer Means Book-place

Another factor that makes for a modern library is the willingness to remain modern. Acceptance of new ideas and programs as they are introduced with new forms of information storage is essential. Nowadays such types of information storage include microform and microfiche, audio tapes and cassettes, films and film loops, video tapes, slides, and other visual aids. All these are aspects of the new meaning and importance of the term *audio-visual,* and they are revolutionizing the library and its potential use. Through access to computers, data-storage banks, closed-circuit television, teletypes, and telefacsimile, the library takes on even greater potential as an information center.

"Many people feel the term *library* (from Latin word for book) should be replaced with *media center*," Professor Andersen has said. "Personally, I see no reason to change names. The old adage, 'By yee works yee shall be known,' is still a good statement. If you're not willing to experiment, no matter what you call yourself, then you are always going to remain the same. Thus I feel that the term library has grown to become an ever broadening concept of information and service."

The Audio-Visual Room in use—
8 videotape players and no noise!

BEFORE—The library facilities of Alden Memorial Auditorium

AFTER—A typical study area in Gordon Library

Things That Never Were

It used to be at WPI that there was no place for the display of things. Traveling exhibits, creations of local artists and WPI people could not be shown. But the aesthetic was not forgotten in the Gordon Library. The display areas have proved to be one of the greatest assets of the building, a means of introducing art in its many forms to the campus.

A related and significant resource is the Music Room, which is an area designed for exclusive use of the WPI community and its recreational and enjoyable listening — whether it be classical, folk, or hard rock. Its facilities include records, tapes and cassettes, FM radio, and the equipment needed to play a dozen different items at once for as many listeners.

The library also houses the Institute's Archives and special collections, which were for so long ignored.

The display area on the top floor of Gordon Library

Main campus entrance to the library

"Certainly the WPI Plan could not have developed as fast as it has without the Gordon Library, for so much of its success is predicated upon a strong and readily accessible collection, staff, audio-visual materials, and equipment.

—Librarian Albert G. Andersen, 1972

How the Library Affects the Campus

In many ways the library anticipated and paved the way toward the WPI Plan. "For one thing," according to Professor Andersen, "here all the departments got together in a major cooperative venture in centralizing the library services." The Gordon Library building has enabled all the information resources of WPI to be centralized, and to be all accessible at one place. Even the computer center is located on the lower floors of the building!

"Certainly the Plan could not have developed as fast as it has without the Gordon Library, for so much of its success is predicated upon a strong and readily accessible collection, staff, audio-visual materials, and equipment. Use of the library has almost doubled each year for the past five years. When seven-week terms were instigated in September, the Library was booming by the second day of classes."

Flexibility of design and adaptability is another important aspect of the library building. Coeducation and the WPI Plan were both introduced after the completion of the Gordon Library, and both have been easily accommodated. And changes will continue. What is accepted one year may be outmoded in five. Adaptability of internal space is needed, and this was taken into account when the library structure was designed, by the use of uniform lighting, few permanent internal walls, and ample wiring. The building can grow as needed to service WPI programs as they develop.

"One thing is certain, the printed book or journal will never go out of style. Yet we must be willing to accept micro-reproduction for seldom used materials and for compactness of storage," Professor Andersen continues. "Today's library must be willing to add and, most of all, update equipment as it is improved. There should be fewer reluctant users if the equipment is easy to use and is easy on the eye."

Harrington Auditorium

Harrington Auditorium is a unique building. It is an auditorium and a gymnasium, and it fulfills these disparate functions with ease. It has space for 2,500 spectators at athletic events, and all the facilities needed for varsity and club sports as well as the physical education programs. When the main floor is used, 3,500 people can be seated,

Squash facilities at Harrington—in use!

Harrington Auditorium from the quadrangle

and the building can be used for a variety of functions. Equipped with a press, radio, and television platform, it is one of the few halls in New England with sufficient lighting for color television.

"It is no exaggeration to say that the Harrington Auditorium has exceeded all our expectations of the utility of the building," according to Professor Robert W. Pritchard, head of the Department of Physical Education and Athletics. "The erection of this facility has permitted the Physical Education Department to initiate the concept of 'lifetime sports' as an optional choice in the required program. With much larger freshman and sophomore classes, we can now use Alumni Gym and Harrington Auditorium at the same time. New opportunities in squash, handball, volleyball, badminton, table tennis, golf, and so forth are being taught, among other sports which our decision-makers of the future can learn to enjoy and pursue in future years."

Among the many athletic events which have been held in Harrington Auditorium have been a New England wrestling tournament and several district- and state-level high school basketball tournaments. According to Professor Pritchard, these are rapidly spreading the good word of WPI all over New England, and the comment that "there is no more beautiful basketball arena anywhere" is heard again and again.

Another department, Military Science, is also located in Harrington, and they find the building's proximity to the athletic fields and the central quadrangle very helpful.

Social events make up a significant part of Harrington's life. Concerts are held there throughout the year, and it is not unusual to have up to 4,000 students (and non-students) inside stomping their feet. Whenever the Harlem Globetrotters come to Worcester, they perform in Harrington, always to a packed house.

"The Harrington families gave us more than a building . . . a mecca for people and groups, a place where healthy bodies are trained, a place for entertainment, for campus gatherings, and a place where a social and athletic atmosphere can prevail.

— Professor Robert W. Pritchard

There has also developed what Professor Pritchard calls a "new kinship" with local industry, as they have discovered that Harrington offers them a sizable auditorium perfectly suited to such diverse uses as service banquets and children's Christmas parties. Professor Pritchard predicts this type of use will increase.

"The Harrington families gave us more than a building," says Bob Pritchard. "Their generosity has given WPI and the community a mecca for people and groups to meet, a place where healthy bodies are trained, a place for entertainment, for campus academic gatherings, and a place where a social and athletic atmosphere can prevail."

INFORMAL—Harrington Auditorium in its normal, everyday guise

FORMAL—Harrington as it is set up for Commencement and other major nonathletic functions

"It is no exaggeration to say that Harrington Auditorium has exceeded all our expectations . . .

— Professor Robert W. Pritchard

Alden Research Laboratories - Building Number One

It seems like such an unprepossessing name for a major facility — Building Number One. Yet behind this obscure title is the most versatile, possibly the most important building on the entire 240 acres of the Alden Research Laboratories.

It serves four distinct functions: administration, education, service, and research. Building Number One's office wing houses the ARL library, two classrooms, and a small auditorium which has been used for such things as thesis defense, staff conferences, and ASME and MSPE professional meetings. In the same wing are cubicles for twenty graduate students and offices for the ARL administrative staff.

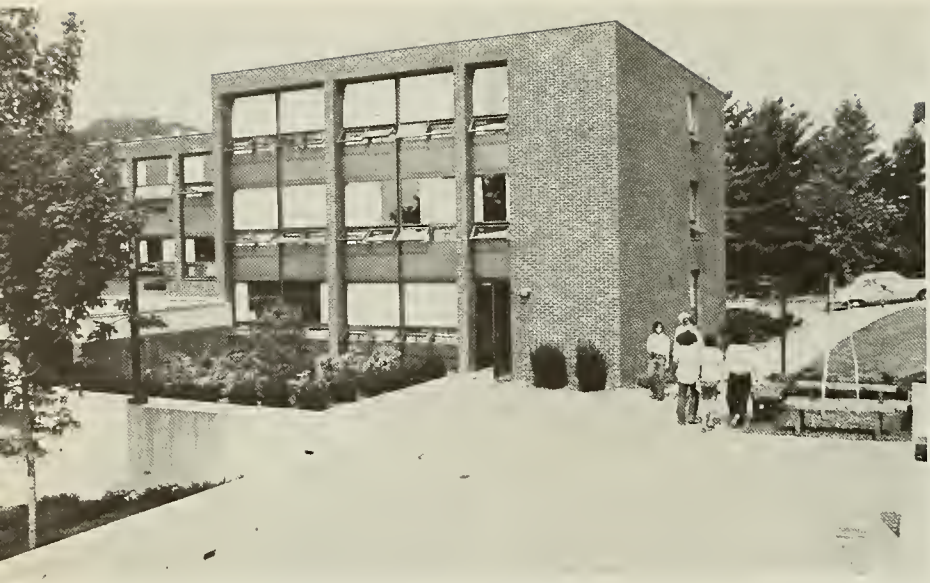
The engineering wing, the Charles M. Allen Experimental Laboratory, has seen a number of exciting developments. Student demonstration experiments are being installed in a new environment and in a format that allows for greater flexibility and student use. Included are a new self-contained glass-sided flume with variable flow and a complete pressure-drop test rig with a variety of pipe sizes and configurations.

There is one small room devoted to weight-standards work. It has the capacity of doing Class A work on weights up to 50 pounds as traceable to the Bureau of Standards. As of this writing, ARL has 10,000 pounds in precision weights for checking platform scales.

On the main floor, and below, of the experimental laboratory a complete large flow calibration loop has been developed. The power generation unit will drive up to 750 horsepower of pumping load. The pumps have a range of capacity from quite small to 20,000 gpm with heads varying from a few feet to 700 feet of water. The weigh tanks are 100,000 and 10,000 pound capacity and the sump beneath the flow has capacity for over 200,000 gallons. Because of a heating capability for the water in addition to the pumping capacity, the Reynolds number potential for this loop has put ARL back in the forefront in the flow measurement field.

A new facility on the floor of the laboratory is a flume over 40 x 9 x 4 feet with a built-in wave generator. Although this equipment has been installed for a specific project and client, it is a permanent installation and will be available for a variety of student and sponsored projects.

Alden's director, Lawrence C. Neale, summarizes it like this: "In all, the complete building (service and experimental wings) has provided the possibility of developing staff, student population and instruction at the graduate and undergraduate level. Professional activities supported by ARL have been enhanced. Finally the technical capability of the ARL complex has been substantially improved."



"It's nice here. It's not like a dorm, really.
— Jack Williams, '73

"Daniels is like a jail by comparison — blah!
— Bob Levi, '73

Stoddard Residence Center

To many students a dorm is a dorm is a dorm and that's all there is to it. But the students who live in Stoddard have a very different feeling about their college home.

Jack Williams, '73, puts it this way: "We were next to last in the lottery list, and we had an apartment all lined up, but then we got this room over the summer. So we gave up the apartment and took this. It's much easier, more convenient, cheaper, everything. . . it's nice here. It's not like a dorm, really. If they had said we could have a room in Morgan or Daniels, I'd think twice about it — Riley, forget it."

Jack's roommate, Bob Levi, agrees: "Daniels is like a jail by comparison — blah!"

Probably the best appreciated feature of life at Stoddard is the quiet. Mark Mooradian, '73, who is resident advisor to the Stoddard "B" building, says that he has never had a complaint about noise while he's been at Stoddard.

"The system of rooms here definitely cuts down on the noise. For one thing, a lot of the noise in dorms comes from kids fooling around in the halls. Here there's not that much room to fool around in, maybe ten or twenty feet. Over in Daniels, where I was last year, it was a lot different. There the biggest thing is frisbee in the halls, hockey in the halls, running up and down the halls, track meets in the halls, bike riding in the halls, everything you can imagine. And the halls there are nicely set up for all that sort of thing — water sliding, everything.

"Here in Stoddard none of that can go on, and that cuts down the noise; and in addition to that there are the rugs and the soundproofing in the ceilings. I've never heard anything that has gone on upstairs over my head, and I've never had one complaint. It's great!"

Jack Williams agrees with Mark. "You can't hear anything. There are only four double rooms to a section. A kid down at the other end can play his stereo as loud as anything, but if you close your door you can't hear any of it. Sound doesn't travel."

Lest we leave you with the impression that all is perfect at Stoddard, Jack had this complaint to make: "The only thing bad here is the carpets. They picked the wrong kind, they put down nylon carpeting, and for kids who smoke it's terrible. You drop an ash and it melts the carpet and costs a fortune to fix."

Residents are in accord that they like Stoddard and the way it is furnished. However, I asked Bob Levi if the small refrigerator by his desk came with the room, he laughed and said, "No. That's a great convenience, though. We don't know how we survived freshman year without one." ■

"Over there in the other dorms the big thing is frisbee in the halls, hockey in the halls, track meets in the halls, bike riding in the halls . . . water sliding . . . Here, I've never heard anything that has gone on upstairs over my head. It's great.

— Mark Mooradian, '73

Chairs
Aren't Always To Sit In

by Ruth Trask

MANY people think that the only purpose of an endowed professorship is to pay a faculty member's salary. In fact, that turns out to be one of the least of the things accomplished.

Four chairs were endowed at WPI in the ten-year program. The latest of these was announced less than a year ago. The WPI chairs involve an additional grant to the faculty member, to be used to broaden his professional and personal horizons. The thing about the system is, it works.

On the following pages we hope to show you through their own words just how these faculty members have used their new resources, and what the endowed chair has meant to each of them. It's far more than a matter of money, as you'll see.

"It's a great feeling to know that I have control over a certain amount of funds that enable me to pursue my professional interests," says Prof. Kenneth E. Scott, '48, who was awarded the first George I. Alden Chair in Engineering.

"So far the grant has made it possible for me to attend several meetings and workshops in my field," Scott continues. "Last May, for example, I presented a paper on the use of multi media in a self-paced (IPI) course in control engineering at the Northeast Audio Tutorial Conference in New Jersey."

Scott, who is professor of mechanical engineering and Institute Director of Audio-Visual Development, has, during the past year, put on a workshop and presented papers on the application of technology to teaching at the annual meeting of the American Society of Engineering Education in Texas. He has also joined the National Association of American Broadcasters and the Association for Educational Communications & Technology.

"Actually, I'm kept pretty busy right here with teaching and advising," he confessed.

He need not have bothered to explain. A student, one of Scott's advisees, shuffled through a pile of manila folders on a table by the office door, found what he was looking for, and walked out, leaving the door open.

"Maybe you'd better shut it," Scott suggested. "It probably won't do much good though. They always manage to find me. . . " He laughed.

(Perhaps this "availability" to those who need him is one of the reasons he was selected as WPI Teacher of the Year in 1971 and why the students dedicated the 1970 *Peddler* to him. Perhaps, along with his outstanding teaching ability, it is one of the reasons he was awarded the Alden Chair.)

"Getting back to the grant," he said. "It has helped me to pursue my recent interests in the application of technology to education."

The phone was ringing and there was a knock at the door. With his hand on the receiver he concluded, "It has let me take advantage of opportunities that otherwise I might have let go by."

Associate Professor of Mathematics Bruce C. McQuarrie, who holds the Harold J. Gay Chair, concurs with Prof. Scott.

"Professional travel and a number of other opportunities have really been opened up for me this year," he admits.

"Last February, because of the extra funds made available through the grant, I was able to present a paper at the International Conference for Mathematicians Interested in Near Rings which was held in Oberwolfach, Germany."

He smiled. "And my wife, Betty, went along with me. Oh, she paid her own way," he added. "But some of her expenses were at a reduced rate. And she didn't cost at all extra in the car we rented. We spent 11 days over there."

He smiled again, remembering.

"In March I went to another conference," he continued. "This time to the Ontario Mathematics meeting in Ottawa where I gave a paper."

Did he use the funds for anything besides travel?

"Oh, yes," he said. "I've purchased quite a few new books and sponsored a speaker for the department."

And for the future? Prof. McQuarrie says he is hoping to attend more meetings with his colleagues. Because he has access to the resources incumbent in the Harold J. Gay Chair, his hopes will undoubtedly turn into reality.

"The Kinnicutt has helped pay for research and travel primarily," says Dr. Herbert Beall, the assistant professor of chemistry who sits in the Leonard P. Kinnicutt Chair.

"At the time I received this particular grant some of the funds were channeled into the purchase of X-ray film for X-ray structure work. We would not have been able to continue this type of work without the Kinnicutt." He paused.

"And, then, of course, there was the trip to New York."

"The trip to New York" turned out to be a meeting of the American Chemical Society where he presented a paper. He said the paper came about as a direct result of the research he had been able to do through the grant.

"I also did something else while I was in New York," he said. "Some sightseeing."

"You mean the Statue of Liberty and the Empire State?" he was asked.

"I knew you'd say that," he replied. "But you're wrong. I visited railway terminals. I'm a railroad buff."

"Did you know that the Jersey Central Terminal is the largest abandoned railway terminal in the world?" he asked suddenly. "And did you know that the Hoboken Terminal has a great hot dog and beer stand on the train concourse where you can sit and watch the comings and goings of the Erie and Lackawanna cars?"

"What you really want, though, to hear is some more about the Kinnicutt," he said.

"Well, we've purchased quite a lot of chemical glassware and new chemicals, so far. Looking ahead, a couple of years from now I expect to attend the International Boron Chemistry Symposium which will probably be held in England. At least I hope it's in England," he went on. "My mother lives there. She's a good baby sitter."

So the family was going, too? "Certainly," he replied.

He didn't volunteer what his method of transportation would be. But it does look as though this is one trip he won't make by train!

There are at least two trips in the future of Dr. Charles C. Reynolds.

Reynolds, who is a professor of mechanical engineering, was recently named the George F. Fuller Professor of Mechanical Engineering.

"Actually," he explained, "I've been more or less conserving part of the funds from my grant so that I can take a term off in order to go to Europe to find out what the new developments are in casting, forging, welding, and plastics."

Germany would be one of his destinations he said. There he will be mostly concerned with metal working. In Birmingham, England, and in France his investigations will turn to casting.

"I also plan to look up some former graduate students along the way," he added. "That always makes things more interesting."

When would he be leaving?

"Soon," he said. "I already have my passport."

Was he planning on doing any travel in this country?

"Yes," he replied. "To Cincinnati-Heald and other companies in the Midwest to discuss co-operative programs concerning student projects."

Had being selected as the Fuller professor benefited him in any other ways?

"Definitely. I've been able to do more development work in the audio-visual field," Reynolds explained. "I've joined several additional professional organizations. As far as new books go, I now purchase any I want although they are expensive. Some cost from $35 to $50 apiece."

He paused for a minute. He looked like a man who was happy that he didn't have to personally pay $35 for each new addition to his library.

"The Fuller has meant a lot," he said. ■

A NOTE FROM THE EDITOR:
WPI is an institution of higher edu
cation. It is, therefore, subject t
most of the pressures being put o
modern American higher educatio
The following special report is pre
sented as a general view, one w
think will interest most of you, o
these issues which affect all col
leges. We will not, here, try to giv
our "answer" to each of the point
brought out. Because we try to d
that consistently in the *Journal*, i
our own way. Remember "The Edu
cation of the Idiot Box" which ap
peared in the Spring 1971 *Journal*
You'll be hearing more about WPI'
teaching methods in the future, too
And there was the April 1972 Inter
session issue. And the continuing
story of the development of th
WPI Plan. As a part of the main
stream of modern higher education
we at WPI aim to keep you, ou
alumni, students, and friends, wel
informed about what we're doing

feedback

To the Editor:

One of the fringe benefits of being the mother of a doctoral candidate is receiving the *WPI Journal.* I read it assiduously as a way of reducing the generation gap.

But your April Intersession issue which I have just received sent me off into orbit all on my own. The combination of Ben Bova's "Next 100 Years" and Ruth Trask's "Intersession 1972" (people *must* have thought of calling it *Intercourse* 1972?) [Yes, they did! – Ed.] added up to the most stimulating reading I've come across for many a long day.

Specifically, they hit me from at least three directions. For one thing I stopped despairing of where technology is taking us and, with all those marvelous things Ben Bova says can be carried on in outer space, for the first time I saw some sense in NASA. Two, my faith in the validity of the American approach to higher education was recharged: any school system that can come up with the theory and practice of Intersession can't be *all* bad. Finally, I am kicking myself for getting born when I did and thereby missing so much excitement.

Since that is a fact of life that I can't change, all I can do is thank you for giving me a vicarious experience that I wouldn't want to have missed.

Lois Hackett
Geneva, Switzerland

To the Editor:

Congratulations to you, to the Publications Committee, and to whomever is responsible for the challenging yet informative articles on Genetic Engineering which make up your August issue.

This topic which will be a major moral and social consideration for the next decade, if not the next generation, should most certainly be brought to our attention, and you have done it most effectively.

Tech has long been known for its leadership in engineering and for its conservatism in social and political areas of concern, but this is the second or third time the *Journal* has been the vehicle for bringing friends of WPI the story of technological *and* social challenge. Keep it up.

I was on the Tech faculty, in Al Schwieger's department [Economics, Government, and Business], while Walt Dennen was editor of the *Tech News,* and I well remember his response to the ASEE – ECPD advocacy of a five-year undergraduate program in engineering, when he wrote that "some of us have put ourselves on a five-year program already."

Ernest D. Phelps
Nichols College
Dudley, Massachusetts

To the Editor:

I am interested in obtaining 25 copies of the articles on "Genetic Engineering" which appear in your August 1972 issue of the WPI Journal, and would be most appreciative of any assistance you might give.

Douglas J. Berndt, Rector
St. Paul's Episcopal Church
Kingsport, Tennessee

A Comment from the Editor:

Someone recently asked why it was that the letters which appear in *Feedback* were so uniformly positive and congratulatory. The only answer is a simple yet puzzling one: Those are about the only letters we receive here, except for a few inquiring (or complaining) about a particular listing in *Completed Careers* or *Your Class and Others.* Obviously, many alumni disagree with individual statements made in *Journal* articles, or with some of those "positive and congratulatory" letters in this section. But they haven't written us. If we get it, we'll print it. *Feedback* is meant to be a forum wherein alumni can talk back to the *Journal* and the Alumni Association and each other. It's your space, not ours.

INTERSESSION

You liked it last year, but you'll love it now.

Last year we told you a little bit about Intersession beforehand. This time around it's bigger, and it's better, and we couldn't make up our minds about which courses to advertise. So we sent you the whole catalog — some 160 courses strong.

Remember—special rate for alumni, only $75 a course (regular rate $110) (and it even includes lunches).

Remember the WPI Calendar: October, November, December, Intersession, February . . .

(**Note:** Most alumni were sent copies of the Intersession Catalog. If you didn't receive one and are interested, just drop us a line.)

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Vice President, L. T. Benoit, '66, 40 Willard St., Apt. 308, Hartford, Conn. 06105
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W. R. Ernst, '53, 159 Tobey Ave., Windsor, Conn. 06095

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Vice President, O. A. Hansen, '25, 40 Danbury Ln., Kenmore, N.Y. 14217
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Council, R. A. Jolicoeur, '67, 10703 Holland Glenwood Rd., Holland, N.Y. 14080

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Secretary-Treasurer, C. H. Daw, Jr., '59, 6816 Hyde Ct., Dublin, Calif. 94566
Council, J. A. Alfieri, '59, 22465 Rancho Ventura No. B, Cupertino, Calif. 95014

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Vice President, S. Ringel, '47, 36 Brookside Rd., West Orange, N.J. 07050
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Council, N. J. Taupeka, '58, 32 Surrey Ln., Eatontown, N.J. 07724
J. L. Reid, '51, 31 Spring Garden Dr., Madison, N.J. 07940

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Secretary-Treasurer, W. C. Goodchild, '40, 1 Woodbury Dr., Beverly, Mass. 01915
Council, J. M. Szymanski, '62, Paradise Travel Service, Inc., 127 Harvard St., Allston, Mass. 02134

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Secretary-Treasurer, W. M. Lloyd II, '51, 15714 S.E. 26th St., Bellevue, Wash. 98004

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Vice President, R. E. Roy, '68, 6628 N. 8th St., Philadelphia, Pa. 19126
Secretary-Treasurer, V. T. Pace, '71, 428 Lombard St., Philadelphia, Pa. 19147
Council, M. P. Zarrilli, '71, 3600 Chestnut St., Apt. 1807, Philadelphia, Pa. 19104

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Vice President, G. B. Brown, '55, 140 Sunset Dr., Pittsburgh, Pa. 15235
Secretary-Treasurer, J. L. Paquette, '68, 109 Greenlea Dr., Coraopolis, Pa. 15108
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Vice President, J. K. Karalekas, '58, 74 Ferncrest Dr., E. Providence, R.I. 02914
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Council, W. R. McLeod, Jr., '58, 128 Red Chimney Dr., Warwick, R.I. 02886

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Vice President, P. J. Bondy, '67, 188 Harvard St., Rochester, N.Y. 14607
Secretary-Treasurer, C. E. Hunt, Jr., '34, 8 Birmingham Dr., Rochester, N.Y. 14618
Council, H. A. Hoyen, '63, 593 St. Rita's Ct., Webster, N.Y. 14580

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Secretary-Treasurer, F. C. Bragg, '24, 595 McAfee St., N.W., Atlanta, Ga. 30313
Council, C. Hammarstrom, '34, see above.

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Vice President, H. R. Freeman, '61, 14700 Nadine Dr., Rockville, Md. 20853
Council, J. M. Smith, '37, 1121 Crest Lane, McLean, Va. 22101

Wilmington

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1st Vice President, R. E. Ferrari, '51, 2404 Landon Dr., Chalfonte, Wilmington, Del. 19803
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Secretary, D. A. Kujala, '52, 2411 Sweet Briar Rd., Tarleton, Wilmington, Del. 19803
Treasurer, R. F. Smith, III, '61, 3351 Altamont Dr., Devonshire, Wilmington, Del. 19083
Members-at-large, F. B. Chamberlin, '41, 2526 Deepwood Dr., Foulk Woods, Wilmington, Del. 19803
C. G. Dahlstrom, '34, 2007 Beechwood Dr., Westwood Manor, Wilmington, Del. 19810
Council, P. Michelman, '51, 2410 Lori Lane South, Tarleton, Wilmington, Del. 19803

Worcester

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Vice President, Thomas P. O'Connor, 26 Sorrento St., Worcester, Mass. 01602
Secretary, P. H. Horstmann, '55, Woodridge Rd., Holden, Mass. 01520
Treasurer, J. H. McCabe, '68, 18 Viele Ave., Worcester, Mass. 01605
Council, R. A. Seaberg, Jr., '56, 462 Shrewsbury St., Holden, Mass. 01520
T. P. O'Connor, '53, see above.
J. J. Dwyer, '33, 14 Sun Valley Dr., Worcester, Mass. 01609
H. O. Painter, Jr., '58, Sudbury Rd., Stow, Mass. 01775
P. F. Seibold, '50, 6 Olean St., Worcester, Mass. 01602
F. W. Madigan, Jr., '53, 15 Mary Jane Circle, Worcester, Mass. 01609
P. H. Horstmann, '55, see above.
A. A. Jalil, '61, 28 William St., Worcester, Mass. 01609

COMPLETED CAREERS

LAWRENCE C. JONES, '16

Attorney Lawrence C. Jones, 78, died July 9, 1972 in Rutland, Vermont.

He was born in Rutland and later attended WPI where he was a member of Phi Sigma Kappa Fraternity.

Mr. Jones was a former five-term Vermont attorney general and three-term Rutland County state's attorney. He was a partner in the law firm of Jones & Jones.

In 1938 he was elected president of the U.S. Attorney General's Association. His vice president was California Attorney General Earl Warren, who later became Chief Justice of the U.S. Supreme Court.

DONALD H. C. TULLOCH, '16

Donald H. C. Tulloch, 78, passed away June 1, 1972 in Chadds Ford, Pa.

A Worcester native, he moved to Pennsylvania 27 years ago. For a number of years he served as a national accounts representative for Union Bag Camp Paper Corp., Philadelphia.

Mr. Tulloch, who was a chemical engineer, was a member of Sigma Alpha Epsilon.

WALTER G. FIELDER, '21

Walter G. Fielder passed away April 21, 1972. He was 73 years of age.

He was born in Worcester, Massachusetts and graduated from WPI in 1921 with a degree in civil engineering. He was the retired area superintendent for Niagara Mohawk Power Corp., Syracuse, N.Y. Previously he was with the Illinois State Highway Dept. and the U.S. Coast & Geodetic Survey.

A member of ASCE, he also belonged to AIEE.

A. WILBUR BARR, '22

A. Wilbur Barr, 71, died June 28, 1972 in Worcester, Massachusetts.

A Worcester native, he graduated from WPI in 1922 as a civil engineer. He was a member of Phi Sigma Kappa.

Mr. Barr was a printer and part owner of the former King-Barr Press in Worcester for many years prior to his retirement in 1967.

JOHN A. MOTT, '31

John A. Mott, 63, a retired civil engineer, died June 3, 1972 in Tennessee.

He was born in Orange, N.J. and received his BS from WPI in 1931. During his career he was employed by the Tennessee Valley Authority, the Container Corporation of America, A. F. Hedman & Associates and Gentry Steel, Inc., Chattanooga.

Mr. Mott was a member of Sigma Xi, Tau Beta Pi, and the Tennessee Society of Professional Engineers.

BASIL G. CONSTANTINE, JR., '58

Basil G. Constantine, Jr., died May 27, 1972 in Beverly, Massachusetts at the age of 36 years.

Born in Winchester, he graduated from WPI in 1958 as a mechanical engineer. He was the president and major stockholder of Gurnard Manufacturing Co., Inc., Beverly. A pioneer in the use of numerically controlled machinery, his corporation manufactured digital components for lunar modules. He was a member of the Numerical Control Society, ASME, and SESA.

JAMES L. DeVENUTO, '58

James L. DeVenuto passed away in June in Hammond, Indiana, following a short illness.

He was born in Marlboro, Mass., attended WPI, and was later employed by the Progressive Tool Co. of Chicago, Ill.

BRIAN M. BUMPUS, '71

Pfc. Brian M. Bumpus, 23, an Army reservist taking part in a two-week reserve training session at Camp A. P. Hill, Virginia, was killed July 15 in a truck accident near Quantico.

He was born in Rhode Island and later studied management engineering at WPI. He was employed by The Fair Department Store in Auburn, Mass.

WPI ALUMNI TRUSTEE POSITIONS

At the June 1972 annual meeting of the WPI Alumni Association, among the articles approved in the revisions to the Constitution and By-laws of the Association was one which formed a Trustee Search Committee of the Association. The committee is composed of five members representing five decades of alumni and they are charged with the responsibility of recommending annually to the Alumni Council the name of at least one alumnus for each alumni vacancy which exists on the WPI Board of Trustees. The Alumni Council makes the decisions on the candidates to be nominated for the positions on the Board and forwards the nominations to the Board for election.

For approximately fifty years the Board of Trustees of WPI has granted to the Alumni Association the privilege of recommending to the Board three candidates per year for positions on the Board. Thus there are always fifteen Alumni members serving on the Board as Alumni Trustees. These candidates, when elected by the Board, serve for a term of five years and may be re-elected once.

In June 1973, Dr. John Lott Brown, '46, Raymond J. Forkey, '40, and Morton B. Joselson will be completing their terms on the Board. All three, however, are eligible to be re-elected.

There are two distinct ways in which alumni may participate in the selection of alumni members of the Board of Trustees. First is the actual proposal of the alumnus to the Alumni Council for consideration for an Alumni Trustee position. As stated in the By-laws of the Alumni Association, the mechanics of proposal are threefold and include alumni chapters proposing candidates to the Alumni Council by submitting a signed proposal, together with a statement by the candidate of his willingness to serve, to the Trustee Search Committee. This proposal must contain at least 15 signatures of chapter members. Another method is for any group of at least 25 alumni to propose a candidate by submitting a signed proposal, together with a statement by a candidate of his willingness to serve to the Trustee Search Committee. For 1973 these proposals must be received by the Secretary-Treasurer of the Alumni Association on or before March 19, 1973. The third method in which candidates may be formally proposed is by the Trustee Search Committee itself which has the responsibility of proposing to the Alumni Council at least one candidate per vacancy each year. Notice is hereby given that petitions for proposing alumni for positions on the Board of Trustees are now being received and can be received by the Alumni Secretary-Treasurer at any time up to and including March 19, 1973. Sample forms for the proposal of candidates are available from the Alumni Secretary-Treasurer upon request.

The second way for alumni to participate is by suggesting names of alumni to the Trustee Search Committee for future consideration. This is an important input of candidates' names to the committee and in turn they will be researched and cultivated by the committee as it is deemed appropriate. It is the hope of the committee that a large reservoir of potential candidates who should be considered and who would be honored by this consideration can be developed. Please contact any member of the Committee with such names or submit the names to Stephen J. Hebert '66, Alumni Secretary-Treasurer, c/o WPI Alumni Office.

Committee: Francis S. Harvey '37, Worcester, Mass., C. Eugene Center '30, Pittsburgh, Pa., Robert D. Behn '63, Cambridge, Mass., William A. Julian '49, McLean, Virginia, George E. Saltus '53, Boulder, Colorado.

YOUR CLASS AND OTHERS

1925

PROF. EDWIN HIGGINBOTTOM has retired as Head of the English Department at WPI. . . . WILLIAM W. YOUNG, who resides in Concord, Mass., is a self-employed manufacturer's agent.

1926

DONALD A. CALDER has retired after a "happy and prosperous business career" as president of the C. S. Brainin Corp. and as vice president and director of Stern Metals Corp., Mount Vernon, N.Y. Don, who says "retirement is great," is vice president of a "very active retirement club of 120 members with all sorts of activities five days a week." He spends his winters in Delray Beach, Fla., home base still being in Wyckoff, N.J. . . . IRVIN S. WEBSTER retired in July after seeing 46 years of service with the Public Service Electric and Gas Company. He was the development engineer in the Gas Department, General Office, Newark, N.J. In 1926 he started as a cadet engineer assigned to the Summit-Morristown District as assistant to the engineer. Later he was assigned in the same capacity to the Ridgewood District in 1936. Mr. Webster has been district superintendent, Pompton Gas Distribution, and has served in a number of other responsible positions. He was named service engineer in 1960 and development engineer in 1970.

1928

FRANK C. TAYLOR has retired as assistant treasurer and assistant secretary in the City Investment Department of the Mutual Benefit Life Insurance Company, Newark, N.J. Prior to joining Mutual Benefit in 1946, he had been with the Irving Trust Company, New York, the Prudential Insurance Company in Newark and Chicago, and the Brooklyn Savings Bank. . . . RALPH H. LUNDBERG, the former vice president and plant manager of Waltham Grinding Wheel, Waltham, Mass., is another retiree.

1929

TAITO K. WALKONEN, formerly a sales engineer with Consolidated Edison Co., New York City, has retired. . . . Also retired is PERCY E. NEWTON, who served as a project engineer for Torrington Co., Torrington, Conn. . . . After serving nearly 40 years with the Connecticut State Highway Department, WILFORD A. SUTTHILL has retired. He says, "I enjoy retirement to the utmost—fishing, traveling, swimming." . . . Another retiree, J. BERNARD JOSEPH, is building a new home in Cape Coral, Fla. He retired from his duties with the U.S. Army Materiel Command, Washington, D.C., last February. . . . CARL H. CARLSON has retired after serving 28 years as plant engineer at Bay State Abrasives, Division of Dresser Industries, Inc., Westboro, Mass. His fellow employees recently honored him with a retirement party at which he was presented a 35 mm projector.

1930

GEORGE N. SMITH has retired from his positions as industrial engineer and personnel manager at Remington Rand Division, Middletown, Conn. Currently he has two boys in college.

1931

EDWARD J. BAYON of Tighe & Bond, Inc., Holyoke, Mass. has announced that The Sippican Corp., Marion, will purchase all of the outstanding stock of the company. Tighe & Bond will continue under its present management, become a division of Sippican, and will operate as a part of the Francis Associates Consulting Engineering Group. . . . EDWARD J. ODLUM was recently named a vice president for the Hartford region of the Connecticut Chapter, National Employment Association.

1932

HARRY G. MERRILL has retired after working for many years at Norton Co., Worcester, Mass. . . . BILL AND MARTHA ASP were seriously injured in an automobile accident in Worcester on Friday night of Reunion weekend. Bill says they are mending well after he spent three weeks himself in Worcester City Hospital

with a concussion, cracked ribs, phlebitis and knee problems. Martha spent seven weeks there with a cracked pelvis and internal problems. They were hit late at night and both cars involved were total wrecks. Best wishes to both for a speedy recovery.

1933

GORDON R. WHITTUM has retired as district manager of engineering and planning for U.S. Steel, Realty Development Division, Worcester, Mass. . . . A. ELMER PIHL has joined Packaging Ind's., Inc., Hyannis, Mass. . . . CLARENCE R. STREETER, JR., is the president of Duko Mines, Inc., Swansea, Calif.

1934

FREDERICK G. WEBBER serves as administrative assistant to the vice president of engineering at F. W. Sickles Division, Chicopee, Mass. . . . PHILIP M. WAY is now with Jarvis Incinerator, Newton Highlands, Mass. . . . CAPT. CHARLES W. McELROY was recently honored at a dinner marking his retirement from 32 years of service with the Navy and Naval Reserve. Capt. McElroy, a member of the WPI Alumni Council, entered the Navy in 1940 and saw active duty with the Naval Construction Forces in the European and Asiatic theaters of war. He was part of the amphibious forces that invaded France on D-Day. During the Korean Emergency he was recalled to active duty. He was promoted to the rank of captain in 1962 following reserve duty as commanding officer of the New Haven Naval Reserve Construction Battalion and as public works officer. Currently he is vice president of sales at Safety Electrical Equipment Corp., Hamden, Conn. . . . CURTIS A. HEDLER has been named assistant to the superintendent of production operations at the Northeast Utilities Service Company in Berlin, Conn. Formerly he was plant superintendent at The Connecticut Light and Power Co., Montville generating station.

1935

ALLAN F. HARDY, JR., is administrative vice president of Sin-Vel Concrete Co., Littleton, Mass.

1936

F. STANLEY WHITE is living in retirement in Sherman Oaks, Calif. Formerly he was with Lockheed Aircraft Corp., Burbank. . . . HAROLD N. PIERSON is with Travelers Insurance Co., Hartford, Conn.

1937

JOHN J. BALSAVAGE is currently with Metallon, Thomaston, Conn. . . . WILLIAM E. BROWN serves as a member of the technical staff at North American Rockwell, Anaheim, Calif. . . . HOWARD W. OSBORN has retired as maintenance engineer for the Panama Canal Co., Balboa, Canal Zone.

1938

ROBERT O. ALEXANDER works at Union Wadding, Pawtucket, R.I. . . . NORMAN A. BOULEY is with H. F. Livermore Corp., Boston.

1939

JOHN A. BACKES serves as field engineer for Waterbury Farrel, Southfield, Mich. . . . JOHN T. RUSHTON has retired as general manager of Publishers Forest Products Co., Anacortes, Washington. . . . JOHN F. PEAVEY is now process engineer at John H. Breck, Inc., Springfield, Mass. . . . GEORGE C. GRAHAM, JR., has employment at Warwick Copy Products, Inc., Warwick, N.Y.

1940

DONALD L. STEVENS is with White & Bagley Co., Worcester. . . . DONALD RAMAKER serves as chief design engineer for Hamilton Standard Division (United Aircraft Corp.), Windsor Locks, Conn.

1941

CHARLES L. HOEBEL is assistant to the vice president of Carrier Corp., Syracuse, N.Y. . . . Bacon Labs, Watertown, Mass., employs EDWARD W. McGUINESS. . . . GUSTAF COONTZ who resides in Frankfurt, Germany, serves as a consul for the U.S. Department of State. . . . K. BLAIR BENSON has been appointed to the newly created position of director of audio and video engineering of Goldmark Communications Corporation, a subsidiary of Warner Communications, Inc. Previously he was vice president of electronic video recording technical development for Columbia Broadcasting System, Inc. He also served as staff consultant of advanced technology for CBS television network.

1942

ALBERT S. ASHMEAD has been promoted to needle group manufacturing manager at The Torrington Company's Needle Division, Torrington, Conn. He will be responsible for the manufacture of needle products throughout the world.

THE FIDDLE-MAKER

Former WPI professor Carl F. Meyer, '22, currently a cellist with the Florida Symphony Orchestra, thinks that the violins his father made may one day rank along with those of Antonio Stradivarius.

The Fiddle-Maker, a volume which Meyer had published in 1970, provides a number of persuasive arguments to substantiate that belief.

When Carl's father, Reinhardt Meyer (who had earlier emigrated to this country from Germany), moved from Lawrence to Worcester to become the proprietor of a violin repair shop, he began serious experimenting in violin making.

Drawing parallels between the lives of Stradivarius and his father, Meyer writes: "Both men were slow to attain fame. . . . Neither maker was a good salesman for his own violins. . . . Both makers' violins increased in value and quality as they matured with playing and aging."

"Now, after more than 200 years, Strads carry prices of thousands of dollars. My father's violins, 150 years younger than Strads, are valued in the hundreds.

"History shows that many of the violins of the master makers leave their active life in the concert hall and become collectors' items. They pass from buyer to buyer at ever-increasing prices, only occasionally being used on loan to performers."

The author says that his father hoped that his violins would continue to be played. He also suggests that they might become even more choice to collectors than Amatis, Guarneris and Strads because there are far fewer of them.

By 1923, he continues, his father was convinced that he could make violins as good as Strads. His violin-making was well publicized at the time.

Prof. Meyer was already an author before he wrote *The Fiddle-Maker*. His best-selling college text book, *Route Surveying and Design* went into its fourth edition in 1969.

In 1965 he received an Honorary Doctor of Engineering Degree from WPI in recognition of his distinguished teaching career and outstanding consulting and writing capabilities.

During his 41 years as professor of civil engineering at WPI, cello-playing was an avocation for Carl Meyer. Since retiring and moving to Florida, he has taken it up in earnest. This is his sixth season as a member of the all-professional Florida Symphony Orchestra, which gives about 75 concerts annually.

And he has discovered that he is truly his father's son. He thinks that the skill his father had in instrument repairing has rubbed off. He is gradually doing more and more miscellaneous repairing of stringed instruments for members of the Symphony Orchestra and others.

According to Prof. Meyer, who is "actively" retired, "It is a thrill to work on valuable old Italian violins!"

Previously he was manufacturing manager of domestic needle divisions. . . . FRANCIS J. ONEGLIA, president of Oneglia and Gervasini Building Construction, Inc., has been elected to the board of directors of Colonial Bancorp, Inc., and its subsidiary, the Colonial Bank and Trust Co. The firm is located in Torrington, Conn. . . . JOHN M. BARTLETT, JR., has been appointed as general manager of the American Chain and Cable Company's plant in Adrian, Mich. For the past two years he has been manager of ACCO's plant in Monessen, Pa. Previously he was a regional sales manager for the Wire Machinery Division of the Morgan Construction Company, Worcester. . . . ROBERT H. GRANT is the president of Grant Corp., Newport Beach, Calif.

1943

Currently WILLIAM E. CURRIE holds the position of chief engineer for Parker-Hannifin Corp., Cleveland, Ohio. . . . GALPIN M. ETHERINGTON serves as manager of process control and product development (Railroad Products Group), Abex Corp., Calera, Ala. . . . WILLIAM M. WALKER is district manager for The Torrington Co. (Bearings Division), Needham Heights, Mass. . . . KENNETH W. MANSUR has been appointed to the Auburn, Mass., board of sewer commissioners. He is the manager of project engineering for the Felters Co., Millbury.

1944

STEPHEN J. TUREK, JR., is employed by Grumman Corp., Bethpage, L.I., N.Y. . . . ROBERT M. TWITCHELL works for the Environmental Protection Agency, Philadelphia, Pa. . . . ROBERT C. BROWN, a sales service representative for the Oxford Paper Division, Ethyl Corp., is currently headquartered at Des Plaines, Ill. . . . VLADIMIR T. DIMITROFF was co-author of the article: "Steam Turbine-Generator Control" in the May issue of the magazine, *Tappi*. He is the manager of control systems engineering, Medium Steam Turbine Generator Product Dept., General Electric Co., Lynn, Mass. . . . ROY E. BAHARIAN has been appointed chief engineer of the Research and Engineering Division of Diamond International Corporation. He will be headquartered at the Division's Stamford, Conn. office. Previously he was assistant director of manufacturing for the Diamond Match Division, New York City, and later served as manager engineering services for the Match and Woodenware Division, Stamford. . . . The New England Electric System publication, *Balance*, ran a profile of JOHN W. LEBOURVEAU, the manager of environmental research for the System, in the June issue. John was named manager of environmental research in 1970. His responsibilities include the supervising of the employees and contractors working on environmental studies as well as managing the air pollution control program.

YOU ATE A WHAT?

Have you tried a good steaming cup of dandelion coffee lately? What about a plate of raccoon pie or a jar of sumac jelly?

Chances are that you haven't, but Frederic S. Wackerbarth, '40, has—in fact, he makes a habit of it. That's because he's answered the call of the wild. Wild foods.

Wackerbarth eased into his unique diet a couple of years ago while serving as a Boy Scout leader in Granville, Mass. He knew that in order to get a first class Boy Scout rating a boy was supposed to find edible plants. He decided to carry things one step further and have his troop eat them after he had made a trial run himself.

The trial run was, in a word, "Terrible." He tried cooking milkweed at home and made the disastrous error of cooking the entire plant instead of the top two sets of leaves.

Going from milkweed to dandelions was a more tasteful experience. He learned to dip them in egg batter, fry them, roast the roots and then pulverize them to make "coffee." He also discovered that they make fine salad greens.

One of his current favorite edible plants is the red stag horn sumac, which is not to be confused with white sumac. He makes jellies, pies, drinks, vinegar, soup, and syrup from the plant. He claims that 20 blossoms will make 50 quarts of juice, and that sumac vinegar is a good meat tenderizer (at least for bear meat!). His sumac meringue pie has proved to be a gastronomical success.

And then there is the matter of the acorns. If the squirrels on Wackerbarth's property have a lean and hungry look, it is not a put-on. Fred is an inveterate acorn storer and he and his five children can out-gather the squirrels any time.

Of course, he doesn't hoard them simply to spite the squirrels. He boils the acorns until the water is clear. (About five hours, to take out the poisonous tannic acid.) Then he proceeds to dry out the meat and grind it into flour. The flour is ultimately transformed into acorn pancakes, muffins, and bread, which is reported to taste like European black bread.

For the adventuresome — A Wackerbarth recipe!

Acorn Bread

½	cup acorn flour
1 ½	cup regular flour
4	tbls. baking powder
1	tsp. salt
4	tbls. sugar
1	egg
1	cup milk
4	tbls. salad oil

Mix ingredients together and cook at 400 degrees for one-half hour for the bread and ten minutes for the muffins.

And how does Wackerbarth's family feel about his unusual delicacies? The five children sample everything. But Mrs. Wackerbarth samples sparingly and gingerly. Her husband admits that she is repulsed "by just the thought of some of them."

Perhaps it was the *porcupine in sour cream* that did it for Mrs. Wackerbarth.

1945

JAMES E. BREED has taken a new job with Vitro (Automation Industries) in Richland, Wash. He works in a quality assurance group. . . . LIONEL H. SECCOMBE is the new manager of the Product and Machine Development Department of Textron's Bostitch Division. For the last eight years he has been superintendent of machine design for the Stanley Works of New Britain, Conn.

1946

WADE E. BARNES is an associate member of Charles T. Main, Inc., Prudential Center, Boston. . . . WILLIAM W. STRIKER has employment at Honeywell Radiation Center, Lexington, Mass. . . . CARL B. PRITCHETT, JR., serves as president of Pritchett Ford Co., Albany, Ga. . . . WALTER J. BANK is a marketing manager for Systems Consultants, Inc., Washington, D.C. . . . NORMAN W. PADDEN is eastern region sales manager for the Singer Co., Little Falls, N.J.

1948

ALAN R. PEARLMAN has been appointed chairman of the board of directors and director of Advanced Research and Development of ARP Instruments, manufacturers of electronic musical instruments. In his new position he will combine overall company planning with long-term product development. Formerly he was president of the firm. . . . CHARLES MOURADIAN serves at the Naval Air Rework Facility, Quonset Point, R.I. . . . EDWARD R. WAINSHILBAUM is with Hughes Aircraft Co., Culver City, Ca. . . . ALBERT E. RILEY is the president of The Hasbrook Corp., Rolling Meadows, Ill. . . . THOMAS H. GROVE has been promoted from senior engineer to engineering associate at Eastman Kodak Company's Park Division. Since joining Kodak in 1964 he has worked on design of machinery for manufacturing film base.

1949

JEREMY W. SMITH was recently appointed district engineer for the Massachusetts Electric Co., Southbridge Street operations center, Worcester. He joined the Company in 1952 as a junior engineer and served most recently as a senior engineer. . . . BAR Industries, Waltham, Mass., employs RAYMOND B. PHANEUF.

1950

JOSEPH E. LEMIRE works for Kendall Co., Needham, Mass. . . . John Hancock Life Insurance Company, Springfield, Mass., employs ALBERT H. PERRY as an insurance salesman. . . . B. B. KUPREWICZ is a supervisor in steam design at DeLaval Turbine, Inc., Trenton, N.J.

1951

PHILIP MICHELMAN is employed by the Film Department of the Diamond Shamrock Chemical Company, Stratford, Conn. . . . Celanese Plastics Co., Belvidere, N.J., employs ROBERT W. RIPLEY as a technical superintendent. . . . ROBERT D. FULMER, manager of logistics support planning for the installation and service department of General Electric Co., Schenectady, N.Y., was recently elected by a decisive vote to the Ballston Spa (N.Y.) Central School Board of Education. . . . CHARLES H. BOUCHARD is a zone manager for Westinghouse Electric Corp., Pittsburgh, Pa.

1952

ROBERT L. CUSHMAN is a senior scientist (computers-software) at Raytheon, Bedford, Mass. . . . ROY G. GULLBERG currently serves as operations manager for DeLaval, Inc., Houston, Texas.

1953

MICHAEL S. ZUCKER is a candidate for the Wappingers Falls, N.Y., School Board. Zucker is a senior engineer manager with IBM, Monansic. Currently he is chairman of an informal group of citizens studying trends in the quality of education provided by the School District. He also helped organize PAST, a community group which is open to anyone interested in improving education in the Wappingers School District. . . . FRANCIS W. MADIGAN, JR., has been elected president of the Associated General Contractors of Massachusetts. He is treasurer of the F. W. Madigan Co., Inc., Worcester. He is also president of the Worcester General Building Contractors Association, a director of the Kiwanis Club, and serves on the board of management of the YMCA. . . . RICHARD R. CARLSON is now employed as a design engineer for Morgan Construction Co., Worcester. . . . PAUL C. MURRAY works as an electrical engineer in the Geophysics Department, Woods Hole Oceanographic Institute, Woods Hole, Mass. . . . WALTER E. LEVINE is manager for the Bindicator Co., Port Huron, Mich.

1954

ANDREW J. MORGO holds the position of market services manager at Honeywell Information Systems, Phoenix, Ariz. . . . DEXTER E. SANFORD is senior engineer (protection) for Northeast Utilities Service, Berlin, Conn. . . . WESLEY D. WHEELER, a naval architect and marine engineer, is coordinator of technical studies at Astilleros Espanoles, S.A. (Zona Sur), Plaza De La Victoria, Cadiz, Spain. . . . PAUL A. WAGENKNECHT is a senior project engineer for Westvaco, Wickliffe, Ky. . . . HENRY M. STRAGE has been elected a director (senior partner) in the international management consulting firm of McKinsey & Company, New York City. Mr. Strage, who has worked primarily on McKinsey studies for the British government in London, was elected a principal (junior partner) in 1967.

1955

DAVID H. BAGLEY is a sales engineer for New England Controls, Inc., Natick, Mass. . . . ROBERT E. RASCOE is with New Britain Specialty, New Britain, Conn. . . . Co-owner of Mardi Construction Co., West Springfield, Mass., is HENRY F. SPADONI, JR. . . . DR. ALAN W. EDE is a self-employed electronics engineer in Corvallis, Oregon. . . . BRIAN J. KELLY is studying for one year at MIT on a Sloan fellowship. He is with the Bell Telephone Co. of Pennsylvania.

1956

Smyth Manufacturing Co. of Bloomfield, Conn., employs ROBERT A. FOISIE of West Hartford. . . . JOSEPH A. MARCOTTE works for Boston Woven Hose, Cambridge, Mass. . . . JAMES C. KUBIK is with Missile Systems Division, Raytheon Co., Bedford, Mass. . . . RICHARD G. HAJEC currently serves as marketing manager for Rotron, Inc., Woodstock, N.Y.

1957

GEORGE P. PROZZO is now manager, tape instrumentation engineering, Sangamo Electric Company, Springfield, Ill. . . . ROBERT H. BECKETT serves as a marketing manager for Decision Data Computer Corp., Horsham, Pa. . . . JOSEPH C. GINKUS, JR., is with Northeast Beauty Distributors, Inc., Worcester. . . . DANIEL J. FISHER, JR., holds the position of project engineer for Leesona Corp., Warwick, R.I. . . . ROBIN AW is with the Mand Carpet Mills, Los Angeles, Calif.

1958

Ensign Bickford Co., Simsbury, Conn., employs ROGER W. ANDERSON as a sales engineer. . . . JOHN D. COLTON is currently employed by Automatic Manufacturing Co., Chicopee, Mass. . . . ROLAND A. CORMIER is with IBM Corp., Chicago, Ill. . . . JOHN H. PORTER is employed by General Cable, New York City.

1959

JOHN E. McGINNIS recently joined Westinghouse Security System, Windsor, Conn. . . . JOHN H. BRITT, JR., is a child care coordinator for the state of Massachusetts. . . . A. DAVID DICKERT, manager of market development in the coatings department for Rohm and Haas Company, was co-author of the article, "A Non-Metallic Paint Mildewcide and Can Preservative For the Seventies" which appeared in the May issue of *American Paint Journal*. . . . WINDLE B. PRIEM, vice president of the Marine Midland Bank in New York, has been appointed the U.S. Small Business Administration's Deputy Regional Director for New York. Priem has served as Deputy Head of the Marine Midland Bank's Nassau County Regional office. As Deputy to the Director of SBA's Region II, he will be responsible for the territory of New York, New Jersey, and Puerto Rico.

1960

RONALD F. POKRAKA is marketing manager for Industrial Dynamics, Pennsauken, N.J. . . . EDWARD J. RUSSELL is an operations executive with ITT Corp., New York City. . . . FIDELE L. DiPIPPO is presently employed by the General Electric Co., Schenectady, N.Y. Previously he served the company in Phoenix, Ariz. . . . JOHN S. VALE has joined Polaroid Corp., Cambridge, Mass. . . . KENNETH L. MATSON has been named superintendent of the Audubon district of Public Service Electric & Gas Co., Trenton, N.J. Formerly he was superintendent of the Trenton district. . . . ROBERT A. CROOK serves as senior engineer for IBM, Essex Junction, Vt. . . . DANIEL Z. GOULD is a senior engineer at Fenwal Electronics, Framingham, Mass.

1961

Married: RICHARD W. JOHNSON to Miss Connie Clifford on April 29, 1972 in Westport, Connecticut. The groom, who has a master's degree from New York University, is employed by Perkin Elmer Company of Wilton.

Born: To Mr. and Mrs. THOMAS E. POSTMA, a son, David J., on April 24, 1972. Postma is with Delco Electronics, Division of General Motors, Milwaukee, Wis.

MAJOR NORMAN I. GINSBURG recently assumed command of the 69th Signal Battalion of the Military Assistance Command, Vietnam. (Communications Center Company) . . . RICHARD V. O'BRIEN, (SIM), has been named industrial relations manager of Bay State Abrasives of Westboro, Mass., Division of Dresser Industries, Inc. He joined the Company in 1942 and was personnel manager before this appointment. . . . RICHARD E. TAYLOR currently works as assistant chief engineer, office of instructional development, Harvard University School of Public Health. . . . JOHN J. GABARRO recently received his PhD from Harvard University. Presently he is an assistant professor at Harvard Business School. . . . PETER K. BINGHAM serves in the nuclear division of the General Electric Co., San Jose, Calif. . . . DAVID A. FREDERICK works for the New York Telephone Co., Albany. . . . DR. PETER J. NATALE is now a research associate at MIT, Department of Biology, Cambridge, Mass. . . . WPI PROF. ROGER R. BORDEN has been named pastor of the Methodist Church, Charlton City, Mass. . . . MARK BRITANISKY is general manager for Service Automatics, Copiague, N.Y. . . . ROBERT R. HALE is program manager for Electron Tube Division, Easton, Pa.

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Headache, dizziness, and double vision; it could be a brain tumor. Fever, and an elevated white blood cell count, with a shift to the left; it could be meningitis. Blood pressure, 240/150; it could be malignant hypertension.

The symptoms are real, but the patient isn't.

Connected to terminals in classrooms at the University of Illinois Medical School, a Tempo Communications processor, provided by GTE Information Systems, acts as a super-efficient secretary to the main computer, accepting information and firing out answers.

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The hypothetical patient returns with additional complaints. This time, the student doctor has less theoretical help at hand. Instead of seeing the patient in the hospital emergency room, as he did the first time, the computer tells him that it's 3 a.m. at his doorstep. The symptoms appear far more serious, and the correct diagnosis is that much more critical.

If he's wrong again, nobody dies.

Teaching medical students to be right can't, and shouldn't, be achieved by computers. That's the work of experienced, dedicated professors of medicine. But as a training aid, the computer has a lot to offer, and we're proud of the contribution to this program that General Telephone & Electronics has been able to make.

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1962

WILLIAM D. HANNINEN is a self-employed contractor in Markville, Minn.... ROGER G. MASSEY has been appointed as vice president and works manager of Parker and Harper Co., Worcester, Mass., a manufacturer of automatic screw machine products and assemblies. He is treasurer of the New England Chapter of the National Screw Products Association. . . . PHILIP M. KEENAN is an employee of Colt Firearm, Hartford, Conn. . . . GEORGE W. HOLMAN works for Holanan Engineering Inc., Agawam, Mass.... DAVID N. LYONS is a sanitary engineer at U.S.E.P.A., Washington, D.C.... PAUL E. ENGSTROM has joined The Hartford's life insurance actuarial staff and has been elected an associate actuary. He will have responsibilities for individual and special risk-health insurance.... WILLIAM E. C. WARR III is with Warr's Marine, Wareham, Mass.

1963

DONALD L. CHAFFEE received his PhD in electrical engineering at UCLA in June. . . . IBM Corp., Poughkeepsie, N.Y., employs ROBERT M. MARTINEZ. . . . G. WILLIAM HARTMAN has joined Meta Chemical Co., Wheeling, Ill. . . . ARTHUR F. DARLEY is with the DPW, Boston. . . . CAPT. JAMES A. VELEZIS is with the Army Corps of Engineers, Ft. Belvoir, Va.... JOHN B. LOJKO is a salesman for Wang Laboratories, Inc., New York City.

1964

ERNEST E. CHENOWETH has employment as an instructor at Thayer Academy, Braintree, Mass.... ROBERT R. DANGELMAYER is with Digital Equipment, Waltham, Mass. . . . JAMES C. KNUDSON works for the State of Washington, Department of Air Pollution. . . . MDC Systems Corp., New York City, employs WILLIAM S. SHURBET. . . . CHRISTOPHER R. ALMY has accepted a position as a structural engineer at General Electric's Knolls Atomic Power Laboratory, Schenectady, N.Y. Formerly he was with the U.S. Army Electronics Command at Fort Monmouth, N.J.... THOMAS M. BOYLE is a systems engineer for IBM Corp., Washington, D.C.... STEVEN T. CHURCHILL has employment as a design engineer for Executone, Stamford, Conn. . . . ALFRED H. HEMINGWAY, JR., has passed the California and New York bar examinations. He was graduated from the law school at Stanford University in California last June. . . . PAUL J. KEATING, vice president of P. J. Keating Company, presided at the commencement exercises at Notre Dame High School, Fitchburg.

1965

RAJKUMAR K. BAJAJ has been named chairman of the sustaining membership enrollment for the Woodstock (N.Y.) region of the Boy Scouts of America. He is a project manager at IBM, Kingston, N.Y.... O. WILLIAM BJORNLUND, SIM, has employment with Warner & Swasey Co., Grinding Machine Division, Worcester.... MICHAEL S. DEMBSKI is marketing manager for Continental Can Co., New York City. . . . CHARLES J. DeSIMONE, JR., works as a senior credit analyst at Hartford National Bank & Trust, Hartford, Conn. . . . HARRY S. FORREST holds the position of process development engineer in the fibers technical department of the American Viscose Division, FMC Corp., Marcus Hook, Pa. . . . Combustion Engineering, Windsor, Conn., employs RAYMOND C. JACQUES. . . . STEPHEN N. KIMANI is a medical student at the College of Human Medicine, Michigan State University, East Lansing. . . . PAUL R. PEARSON is in the computation and programming department of the Kearfott Division of the Singer Co., Wayne, N.J. . . . USAF CAPTAIN FRANCIS J. PINHACK, JR., a T-38 Talon instructor pilot, has been assigned to a unit of the Air Training Command at Moody AFB, Ga. . . . PHILIP B. RYAN was recently appointed to the planning board of the city of Manchester, N.H. He is principal of the management services department of Nathanial F. Bigelow and Co.... EDWARD R. REGAN recently received his master's degree in business management from Northeastern University. He is a development engineer with USM Corp., Beverly, Mass. . . . HALLETT A. WRIGHT is a sales engineer for R. L. Stone Co., Inc., Buffalo, N.Y.

1966

MICHAEL C. NAPOLITANO is involved in circuit design at IdeaLab, Franklin, Mass. . . . ROBERT A. FULOP now works for J. J. Sullivan Co., West Hartford, Conn. . . . GERALD J. PARKER is a unit chief for the Environmental Protection Agency, Research Triangle Park, N.C. . . . GARY M. ANDERSON is studying in the civil engineering department at Duke University, Durham, N.C. . . . DONALD E. McCARTHY is with the U.S. Navy Engineering Command, Navy Yard, Washington, D.C.

1967

Born: To Mr. and Mrs. WAYNE M. CHIAPPERINI a son, Robert Frank, on September 20, 1971. Wayne, who recently received his master's degree in civil engineering from the University of Connecticut, is now doing research and development on industrial wastewater treatment systems for FRAM Corp., Providence, R.I.

RICHARD M. GUTKOWSKI serves as a teaching assistant for the Department of Civil & Environmental Engineering, at the University of Wisconsin, Madison. . . . PAUL B. CHERUBINI works as a sales engineer at Standard Sign & Signal Co., Inc., Clinton, Mass.... THOMAS Y. LIU is a technician for E. I. Du Pont Co., Saugus, Calif. . . . STANLEY P. PIETREWICZ has employment as a computer analyst at Newport News Shipyard in Virginia. . . . BHOOPEN K. KURANI is a project engineer for Souza & True, Inc., Cambridge, Mass. . . . USAF CAPT. JONATHAN P. WORTHLEY has entered the Air Force Institute of Technology, Wright-Patterson AFB, Ohio, where he will study toward a master's degree in electrical engineering. . . . CHARLES H. GOODSPEED III recently received his PhD in Civil Engineering from the University of Cincinnati. He was also elected to Sigma Pi. Dr. Goodspeed has accepted an assistant professorship at Carnegie-Mellon Institute, Pittsburgh. . . . JOSEPH J. CIEPLAK has been appointed assistant to the director of public relations at the University of New Haven. In June he was presented the Dean's Award for outstanding service to the University. . . . FRANCIS R. CHIARILLO is with Travelers Insurance, Hartford, Conn.

CARMEN DELLA VECCHIA has received his master's degree in mathematics from St. Mary's in Texas.

1968

Married: STEPHEN M. HOLUB to Miss Sarah T. Dougherty on May 27 in Ridgefield, Conn. The bride is merchandising editor of House and Garden Magazine. The groom is a chemical engineer for Union Carbide Corp., Molecular Sieve Division, Tarrytown, N.Y. . . . SCOTT W. RAMSAY and Miss Gretchen L. Harris in Skowhegan,

Me., on June 10. Mrs. Ramsay is employed as communications consultant for the New England Telephone Co., Boston. Scott is a candidate for an MBA degree at the Whittemore School of Business, University of New Hampshire, Durham.

Married: A. LEONARD BERGQUIST to Miss Beatrice Marie Powell in Greenwich, Connecticut, on July 1, 1972. MICHAEL LATINA was one of the ushers. Mrs. Bergquist, a graduate of the University of Connecticut, is a teacher in the Greenwich school system. Her husband is a field engineer with Beckman Instruments Co., Inc., Wakefield, Mass. . . . CAPT. RICHARD G. PERREAULT and Miss Helga M. Fink on May 27 in Kitzingen, Germany. Capt. Perreault has served in Germany since 1969.

Born: to Mr. and Mrs. KENNETH H. TURNBULL their first child, a son, John P. Turnbull, on July 9, 1972.

CARL R. DUPRE writes that he is a student at the University of Massachusetts Graduate School. . . . GEORGE K. FAIRBANKS works for Tryon Mfg., Shelton, Conn. . . . STEVEN C. HALSTADT is at Amos Tuck School, Dartmouth College, Hanover, N.H. . . . Currently JOSEPH F. HILYARD works as assistant research engineer, Highway Safety Research Institute, University of Michigan, Ann Arbor. . . . HYMAN S. LOFCHIE serves as a designer for C. T. Main, S. E. Tower, Prudential Center, Boston. . . . JOSEPH S. SATIN is with Joseph Satin Co., Shelton, Conn. . . . LEO T. SPRECHER does computer research for the General Telephone & Electronics Laboratory, Bayside, N.Y. . . . TERRENCE P. SULLIVAN is a stockbroker-retail sales, for White Weld and Co., Inc., Boston. . . . RONALD G. CUMMINGS is at Suffolk Law School, Boston.

DANIEL R. ROY recently received his master's degree, with honors, from Northeastern University. He is employed at General Electric, Lynn, Mass.

KEITH L. VAN BUSKIRK, who is attending Suffolk Law School, is president of Land Auction Bureau, Boston. . . . GREGORY H. SOVAS is assistant sanitary engineer for the New York State Division of Air Resources, Albany, N.Y. . . . GEORGE R. BAZINET is a programmer for Pratt & Whitney Aircraft. . . . VICTOR V. CALABRETTA has been employed by C. E. Maguire, Inc., Providence, R.I. . . . ROBERT A. FALCIANI serves as a stress engineer for Stone & Webster Engineering Corp., Boston.

1969

Married: GORDON J. MEARS and Miss Donna Elizabeth Wise on May 20, 1972 in Lunenburg, Massachusetts. MICHAEL GAN was an usher. The bridegroom is employed by the General Electric Co., Fitchburg, Mass. . . . LESLIE T. HATCH to Miss Kathleen P. Nugent in Dorchester, Massachusetts, November 5, 1971. Hatch is employed by Metcalf & Eddy, Boston, where he is involved with a research group. Currently he is running an industrial waste pilot plant under an EPA grant.

HELP FOR PARTIALLY SIGHTED

A new, low-cost system which can help hundreds of thousands of legally blind persons to read and write again has been introduced by Visualtek, Santa Monica, Calif.

Larry Israel, '61, president of the firm, says that "with this system, nearly-blind people not only can read or write whatever they want — without assistance — they can return to hobbies and jobs they had to give up when their sight failed. They can return to more normal lives."

Known as the Visualtek Read/Write System (RWS) and selling from $795 to $2,000, the portable device makes use of a TV camera system with zoom lens, special high-illumination lighting, and a viewing table for scanning. All can be connected to a conventional black and white TV set for viewing.

The system can be used effectively by any partially sighted person who can read two-inch letters at close range. To read, the user of the RWS closed-circuit TV system merely places his reading material on the table under the camera lens, adjusts magnification and light intensity, and operates a scanning control, while reading the enlarged, brightened words on the TV screen. To write, he places his paper on the table under the lens and writes, checking his progress on the TV screen. Or, he can type with the system using any conventional manual or electric typewriter.

The ingenious "reading machine," with magnification of up to 30 times, allows many visually handicapped individuals to read and write with ease and speed, even with visual acuity as low as 5/800 in their better eye.

Based on concepts developed at the Rand Corporation under the sponsorship of the U. S. Department of Health and Welfare, the Visualtek Read/Write System is being rented, leased or purchased principally by agencies, institutions, and nationwide organizations. Public libraries and some veterans administrations have found the unit especially helpful. The Perkins School for the Blind, Boston, and The Florida State School for the Blind are among the special schools making use of the equipment.

Larry Israel, one of the founders of the year-old Visualtek company, has discovered that the results of his new venture can be most gratifying. He says, "The testimonial letters we get from satisfied customers, expressing such immense gratitude at their new-found ability to read and write as they have never been able to do since they lost their sight, is truly rewarding. It's especially heart-warming when we receive information about a young child, or a high school or college student whose life has been altered markedly because of our Read/Write System."

Married: DAVID J. BARRETT to Miss Theresa Ann Monroe on June 10, 1972 in Worcester, Mass. David is a service engineer at Riley Stoker Corp. . . . RENE J. ROY and Miss Gail Ann Kmiotek on June 10 in Whitinsville, Mass. Mrs. Roy, a graduate of North Shore Children's Hospital, is employed as a licensed practical nurse. Rene has employment as an electrical engineer at Raytheon, Bedford, Mass. . . . JOHN E. CONNELL, JR., and Miss Birgitte Nicolajsen on June 3 in Kolind, Denmark. The bride is a graduate of Arhus University in Arhus, Denmark where the groom has also

been studying. . . . JOHN S. SIMPSON to Miss Jeanne Marie Drapeau on July 1, 1972 in Tiverton, R.I. Mrs. Simpson is a teacher in the Portsmouth School System. Her husband is employed at the Naval Underwater Systems Center in Newport. . . . FRANCIS W. SKWIRA to Miss Gerald Carreker Fowler on June 24 in Atlanta, Ga. The bride has received a master's degree in French literature from Emory University in Atlanta. The groom is employed by the General Electric Co., San Jose, Calif.

RICHARD D. ALPERT is on sabbatical leave in Europe. . . . STEPHEN R. ANDRUCHOW is a construction engineer for Stephen Andruchow, Inc., West Warwick, R.I. . . . DAVID W. EATON serves as systems programmer for General Electric Company, Phoenix, Arizona. . . . THOMAS C. GURNEY is a student at Central Bible College, Springfield, Missouri. . . . ROY C. JOHNSON, JR., recently received his PhD in civil engineering from Rice University, Houston, Texas. . . . PHILIP M. KAZEMERSKY is a nuclear engineer for the Tennessee Valley Authority in Chattanooga. . . . Z. RONALD STELMAK serves as a sales engineer for Westinghouse and is currently located in Syracuse, N.Y. . . . MICHAEL W. NOGA has employment with Stone & Webster, Boston. . . . CARL NOTHNICK is with Westinghouse Electric, Baltimore, Md. . . . STEPHEN R. PHILLIPS is completing his thesis for his MS in industrial design at the Institute of Design, Illinois Institute of Technology.

GREGORY E. POLLACK is assistant marketing manager in the micrographic division of Canon USA, Inc., Lake Success, N.Y. . . . GERALD M. ROBBINS is a graduate student in the department of landscape architecture at the University of Illinois. . . . RONALD P. ROSADINI is a teacher in the Torrington, Conn. School System. . . . ROBERT J. SCOTT is a graduate student in city and regional planning at Cornell University, Ithaca, N.Y.

NEIL M. GLICKSTEIN has been appointed math-science teacher at Home Base School, Watertown, Mass.

1970

Married: A. PATTON ABBE II to Miss Christine Driscoll on May 28, 1972 in Windham Center, Connecticut. Abbe is the owner of Keats Krafts Clothing Store in Mystic, Conn. His bride is employed as a model for the portrait painter, Robert Brackman, N.A. of Noank, Conn. . . . RICHARD F. ABRAMS to Miss Jean M. Parker on June 10 in Spencer, Mass. The bride is an elementary art teacher in the Spencer schools. Her husband is with Artisan Industries, Waltham, Mass.

Married: MARK E. BROWN and Miss Carolyn Marie Gilbertson June 17, 1972 in Battle Lake, Minn. Mrs. Brown has completed graduate studies in social work at Washington University, St. Louis. Mr. Brown is a candidate for a doctorate in chemical engineering at the University of Minnesota, Minneapolis. . . . RALPH DilORIO to Miss Rosemary Calcagno in Seaford, N.Y. on June 3. Ralph is a senior engineer for ATT Long Lines Department. . . . DUNCAN H. GILLIES and Miss Patricia M. Teczar on July 7, 1972 in Worcester, Massachusetts. The bride teaches at Union Hill School. The bridegroom is with the Massachusetts Electric Co. . . . ROGER P. HENZE to Miss Judy Lynn Welch in North Adams, Massachusetts on July 15, 1972. Mrs. Henze is a student at North Adams State College. Mr. Henze is a candidate for his master's degree in city and regional planning from Cornell University this year.

KENNETH C. BASSMANN, who was recently promoted to first lieutenant in the U.S. Air Force, has received an award for a military improvement suggestion which he gave at Andrews AFB, Md. He is a communication-electronics officer with the Air Force Communications Service. . . . 2/LT. GERRY A. BLODGETT has completed a nine-week ordnance officer basic course at the Army Ordnance Center and School, Aberdeen Proving Ground, Maryland. . . . JAMES HANNOOSH was awarded a master of science degree in mechanical engineering from MIT last June. He has been accepted for the doctoral program in the field of material behavior at MIT. . . . JERRY L. JOHNSON, who received his MS from Holy Cross this year, is starting his PhD program at Dartmouth College, Hanover, N.H., this fall. . . . PETER F. LALOR was recently awarded his master's degree in metallurgy from the University of Connecticut. . . . JOHN J. LYONS is a systems programmer for WPI. . . . KALVIN W. NGOON is a programming trainee at State Mutual Life Assurance Co., Worcester. . . . 1/LT. DENNIS L. NOVAK has completed the four-week Army Alaska Summer Leader's Course at the Northern Warfare Training Center, Ft. Greely, Alaska. He is a platoon leader at Ft. Wainwright, Alaska. . . . GEORGE E. PHILIPPON has been named systems manager, Identicard division of Management Service Associates, Lancaster, Pa. . . . ROSS A. WILLOUGHBY is a sales representative for Air Way Sales, Worcester.

LAURENCE P. VALLEE has received his MS degree in civil engineering from the University of Connecticut. He has accepted a position with the structural firm of Stone and Webster Engineering Corp., Boston.

1971

Married: ANTHONY SCHEPIS to Miss Laura Candace Fabrizio in Ouincy, Massachusetts on May 21, 1972. Mrs. Schepis, a graduate of Forsyth Dental School and Northeastern University, is employed as a dental assistant. Her husband is an industrial engineer at Sealy Mattress Co., Randolph, Mass.

Married: DAVID P. BUELOW and Miss Helen M. Laptewicz on June 10, 1972 in Westboro, Massachusetts. Mrs. Buelow is a graduate of Salter Secretarial School, Worcester. David is with the U.S. Army Corps of Engineers in Waltham. . . . STEVEN G. EMERY to Miss Mary Evelyn Jackman July 15, 1972 in New Haven, Connecticut. The bride is a registered nurse with the Visiting Nurse Association of Worcester. The groom is in the cardiology department at St. Vincent's Hospital, Worcester. . . . ROBERT P. HART and Miss Elizabeth T. Cushwa on July 8 in South Hadley, Massachusetts. Mrs. Hart is a graduate of Framingham State College. Her husband is a design engineer at Norden Company, Norwalk, Conn.

Married: DOUGLAS E. HOLMES to Miss Christine F. Holda on June 24, 1972 in Worcester, Massachusetts. Mrs. Holmes is a kindergarten teacher. The groom is a graduate student in the material sciences division of the University of Connecticut, Storrs. . . . JEFFREY P. LASSEY and Miss Lynne K. Maniero on June 25, 1972 in Worcester. The bride, a graduate of Worcester State College, is a teacher. Her husband is with New England Electrical Co., Weymouth, Mass. . . . EDWARD C. LOWE, III to Miss Judith S. Cogswell on July 8, 1972 in Longmeadow, Massachusetts. Mrs. Lowe is a French teacher. The bridegroom is a sales engineer employed by General Electric of Schenectady, N.Y. . . . 2/LT. PETER J. MARKUNAS and Miss Victoria R. Chicoine on May 13, 1972 in Leicester, Massachusetts. Mrs. Markunas is a graduate of Ward Business School. Her husband is a candidate for his master's degree in mechanical engineering at WPI. . . . SPAFFORD A. MARTINDALE, JR. and Miss Betteanne Mitchell in Worcester, Massachusetts. The bride is an alumna of Anna Maria College.

Married: VINCENT T. PACE and Miss Maryann Bagdis on June 10, 1972 in Grafton, Massachusetts. DONALD TANANA and FRANK STEINER were ushers. Maryann, a former WPI student, is a senior at Drexel Institute of Technology in Philadelphia. Her husband is an electrical engineer at Philadelphia Electric Co. . . . RICHARD B. HOPEWELL to Miss Claudia Louise Secrist July 1, 1972 in Needham, Massachusetts. Mrs. Hopewell is a music education teacher. The bridegroom is doing graduate work at WPI. . . . NORMAN W. SOUSA, JR., to Miss Barbara K. Phillips on July 1, 1972 in Pearl River, N.Y. EDWARD J. SHERMAN was best man. The bride is a Becker Junior College graduate. Her husband is with the Sousa Corp., West Hartford, Conn. . . . PAUL R. SWENSON and Miss Elaine M. Zoppo on June 24, 1972 in Paxton, Massachusetts. Mrs. Swenson, a graduate of Becker Junior College, is a senior at The Memorial Hospital School of Nursing. The bridegroom is a field engineer for Granger Contracting Co., Worcester.

Married: JOHN ANDERSON and Miss Josephine Vanni in April in Ho-Ho-Kus, New Jersey. Mrs. Vanni is a graduate of Newton College of the Sacred Heart, Newton, Mass. Her husband is with Public Service Electric and Gas Co., Newark, N.J. EDWARD "NED" CUNNINGHAM was best man. Ushers were GARY MASON, PAUL RUSSO, and ROBERT KELLEY.

CHIA-SOON KU is a graduate student in the Department of Chemical Engineering, Pennsylvania State University, University Park, Pa. . . . ALAN SHAPIRO, who is currently home on leave from his duties with the Peace Corps in Ecuador, expects to return soon to finish out his two-year enlistment. Recently a full page of photos he took in that South American country was published in the *Transcript*, North Adams, Mass.

PAUL B. ASH has earned his master of arts degree in teaching, with an education major, from the University of Massachusetts at Amherst. . . . THOMAS R. BALL is employed by Astra Pharmaceutical Products, Inc., Worcester, in the area of data computer-research and development. . . . MICHAEL J. GRADY is a software systems engineer at Honeywell Information Systems, Inc., Cambridge, Mass. . . . UMBERTO MILANO is with the U.S. Bureau of Reclamation, Denver, Colo. . . . MARTYN H. STRONG has received his master of engineering in electric power engineering at RPI, Troy, N.Y. He is returning to RPI this year to study for his master's degree in environmental engineering. . . . JAMES E. TROUTMAN, JR. is currently a computer instructor at Lowry AFB, Colo.

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1972

Married: GARY A. FOOTE and Miss Catherine E. Bogard on May 27, 1972 in Worcester, Massachusetts. The bride is a graduate of the University of Connecticut. . . . MICHAEL W. THAYER to Miss Cynthia Ellen Roff last spring. Mrs. Thayer graduated from Wheaton College. . . . PETER A. BERTASI and Miss Janet A. Juzwinski in New Britain, Connecticut on June 17, 1972. The bride has been studying for her BS degree in education at Central Connecticut State College. The bridegroom is a graduate student in business administration at the University of Rochester, N.Y. . . . DOUGLAS E. BEST to Miss Claudia J. Taylor in East Longmeadow, Massachusetts. Mrs. Best attended Salem State College and graduated from Chandler School for Women, Boston. Her husband is employed by Heald Corp., Worcester.

Married: CHARLES J. BRINE and Miss Patricia Ann Rimo on June 3, 1972 in New Brunswick, N.J. The bride is an alumna of Douglass College in New Brunswick. Both she and her husband plan to attend graduate school. The groom expects to enter the College of Marine Studies (Chemical Oceanography) at the University of Delaware where he will enroll in the PhD program. . . . MARK C. DUPUIS and Miss Karen F. Fitzgibbon in Lunenburg, Massachusetts. Mrs. Dupuis graduated from Fitchburg State College. The groom is in production management at Procter and Gamble in Quincy, Mass. . . . LOUIS A. FERRARESI, JR., to Miss Susan Ann Jones on June 18, 1972 in Worcester, Massachusetts. Mrs. Ferraresi graduated from Emmanuel College, Boston. Her husband is a controls-systems engineer for Stone & Webster Engineering Corp., Boston. . . . GEORGE A. OLIVER and Miss Barbara Frances Davis on June 10, 1972 in Bedford, Massachusetts. The bride is a graduate of Westfield State College. The bridegroom is attending California Institute of Technology, Pasadena. . . . DONALD J. POLONIS and Miss Patricia Ann Theresa Yarusawych in Easthampton, Massachusetts on June 10, 1972. The bridegroom has accepted a teaching fellowship at Union College, Schenectady, N.Y., where he is working for his master's degree in operations research in the School of Industrial Administration. . . . MARCELLO A. RANALLI to Miss Diane Rose Bianco on June 10, 1972 in Worcester. Mrs. Ranalli is a casualty rater at Travelers Insurance Co.

JOSEPH BIANCA is working for Combustion Engineering, Windsor, Conn. He is a research and product development engineer in the company's Kreisinger Development Laboratory. . . . ROBERT A. COLP is a graduate student at the University of Wisconsin, Madison. . . . Currently DR. RAYMOND M. FISH is employed by the National Institute of Health in Bethesda, Md. . . . ANDREW J. GLAZIER is with the U.S. Army Corps of Engineers. . . . ROBERT L. LYONS is with the field service support group at Leeds & Northrup Co., North Wales, Pa. . . . FRANK D. McMAHON has employment as a sales trainee for W. R. Grace, Pontiac, Mich. . . . ROBERT I. PARRY has accepted a position with the Philadelphia Electric Company.

ROBERT M. PASUCCI is a transportation planner at Raymond, Parish, & Pine, White Plains, N.Y. . . . JEFFREY A. PETRY is with the Torrington Company, Torrington, Conn. . . . GARY E. RAND serves as an associate engineer at Raytheon Co., Wayland, Mass. . . . W. J. Megon & Co., Naugatuck, Conn., employs EDWARD D. SCHRULL as assistant project manager. . . . WALTER J. SMITH was commissioned an ensign in the U.S. Navy Reserve in September. He has been at the Naval Officer Training Center in Newport, R.I. . . . KENNETH R. WADLAND is a graduate assistant in the math department at the University of New Hampshire.

ROBERT M. BYRNE has employment at The Gazebo, Torrington, Conn. He is also president of the Torrington Men's Choral Club. . . . ROBERT S. AMES plans to do graduate work in mathematics at Syracuse University this fall. . . . GLENN E. CABANA has been employed by Western Electric, North Andover, Mass. . . . DOUGLAS B. HARRINGTON is a technical marketing program trainee at the General Electric Company. . . . JOHN D. KALETSKI holds the position of manager at Clairol, Stamford, Conn. . . . WALTER R. McILVEEN serves as a designer for Walter McIlveen Associates, Avon, Conn. . . . JOHN C. MOORE is a field service engineer for the power division of Westinghouse, Minneapolis, Minn. . . . Uniroyal Chemical Division, Naugatuck, Conn., employs THOMAS A. REYNOLDS as a process engineer. . . . MARK F. SAMEK is a graduate student at WPI. . . . LESLEY E. SMALL has employment as a staff engineer for the Southern New England Telephone Co., New Haven, Conn. . . . THOMAS J. TRACY is with Stone & Webster, Boston, Mass. . . . LT. STEPHEN A. WILKINSON expects to be assigned to Ft. Bragg, N.C. . . . WALTER L. BALLARD recently joined Eastman Kodak Company, Rochester, N.Y. and has been assigned as a development engineer with the Apparatus Division. . . . JOHN G. CROFT, JR., SIM, is assistant purchasing manager, Wyman-Gordon, Worcester. . . . HENRY E. HIRVI, SIM, is a project leader at Cincinnati Milacron-Heald Corp., Worcester. . . . GUS L. SANNICANDRO, SIM, serves as engineering design supervisor for Fenwal, Inc., Ashland, Mass.

HOWARD H. LEVINE is in the department of physics at the University of Illinois. . . . JEFFREY ASKANAZI is a medical student at Upstate (N.Y.) Medical Center. . . . RICHARD J. WALLACE is studying at WPI. . . . KURT M. WUSTERBARTH has accepted employment at the Goodyear Tire & Rubber Co.

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ALUMNI ASSOCIATION RECOGNITION

The Robert H. Goddard Award

presented annually for outstanding professional chievement and is named in honor of obert H. Goddard, '08, father of the rocket. ecipients this year were Howard G. Freeman, '40; ay W. Heffernan, '19; and Robert H. Grant, '42 ıot pictured). The awards were presented by lilton P. Higgins, chairman of the WPI Board Trustees.

Howard G. Freeman, '40

Ray W. Heffernan, '19

he Herbert F. Taylor Award

presented annually to alumni for distinguished rvice to their alma mater. The award is named honor of Herbert Foster Taylor, '12, first full-time cretary-treasurer of the WPI Alumni Association. ecipients of the Taylor Award in June were ayne E. Keith, '22, and Dr. William E. Hanson, '2. The awards were presented by Irving James onahue, Jr., '44, President of the Alumni ssociation.

Dr. William E. Hanson, '32

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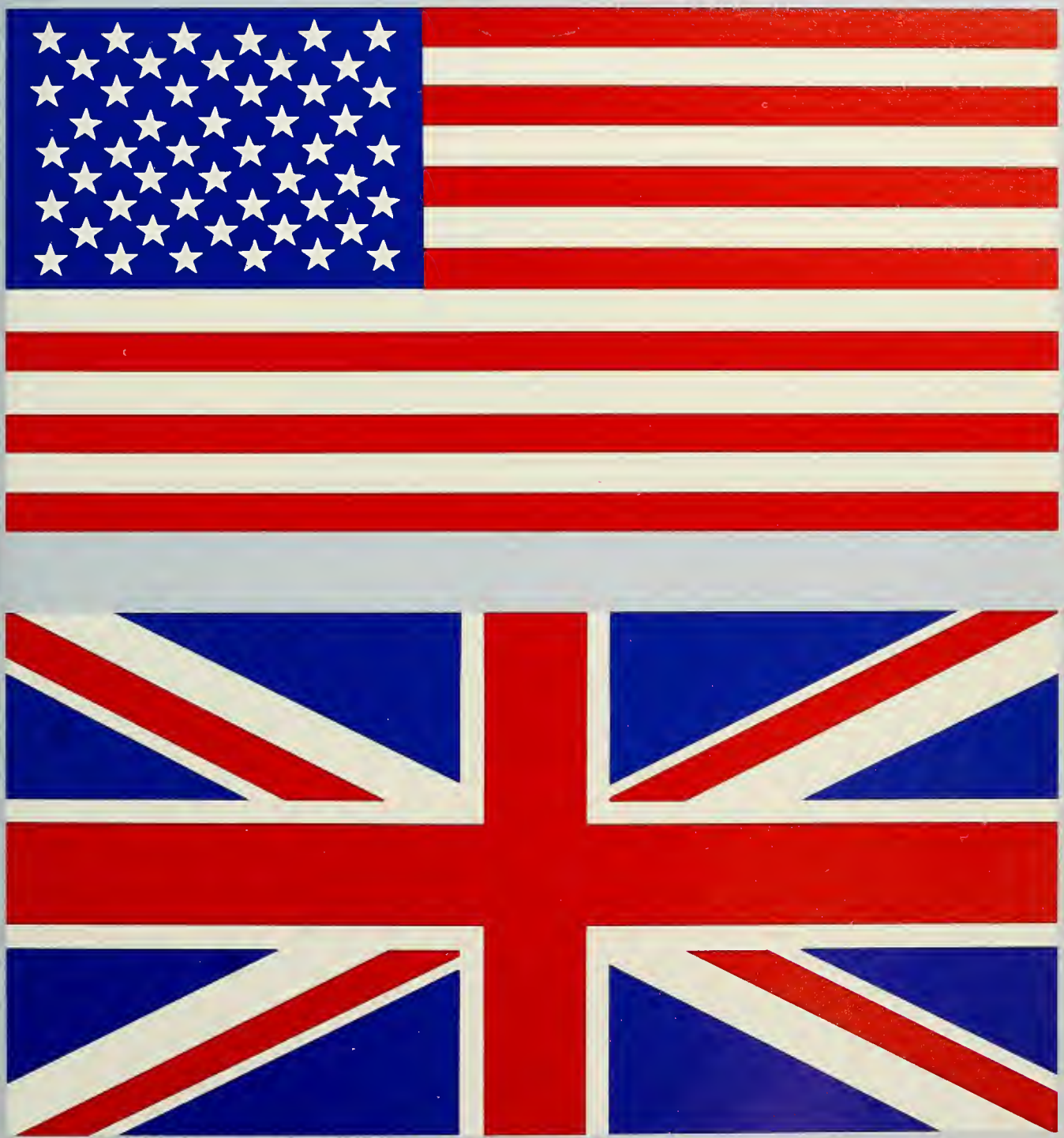

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IN THIS ISSUE

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EDITOR'S NOTE

We've got a treat in store for you coming in February: a cover dramatically different from anything the Journal has had before, and a redesigned layout inside, all intended to make the magazine more readable and visually more appealing.

"Oh, to be in England now that April (or August or January)'s there"

By Ruth Trask

THE BRITISH ARE COMING! The British are coming! In fact, some of them have already landed and established a beachhead at Stoddard Residence. But all is not lost. A doughty band of WPI students has taken over a portion of the campus at the City University of London without even firing a shot!

These friendly invasions were brought about through the recent implementation of the student exchange program at WPI. Started just last spring, the program has already proved to be a remarkable success.

"WPI students participating in the plan couldn't be more enthusiastic, especially about the project work in London," says William R. Grogan, '46, Dean of Undergraduate Studies. "And the English students have been outstanding. All of the first group that came to WPI earned honor grades. Three of them remained in the United States during the summer to work on student projects involving environmental pollution problems and the Urban Car. They really got involved."

"All students whether studying under WPI Plan degree requirements or not are encouraged to participate. The only extra cost is the Boston to London student air fare," Grogan continued.

At present there are five more English students spending a term at WPI. Although they have been here only a few months, they have plenty to say about WPI, their own univeristy, and the American way of life.

Three WPI students, recently returned from England, answer in kind about City Univcrsity, WPI, and the British way of life.

Some of their remarks may sound irreverent or mind boggling, but they are honest.

Here are the observations of eight who made the great exchange.

"I CERTAINLY WOULDN'T MIND working in the USA," declares George Conabeer, who has become quite tuned in to the American scene after spending nearly four months on the hill.

Conabeer, a born adventurer, is partial to high-heeled boots and Indian headbands. At 17 he dropped out of Hayes Grammar School in Middlesex determined to "go out into the real world of industry."

"I was sick of education for the sake of education," he says. "As much as they tried they couldn't persuade me to stay on in school until I reached 18."

George became employed by British Overseas Airways Corporation (BOAC) as an aircraft electrical engineering apprentice. After three years the company sent him to City University to study air-transport engineering under the work-study program. At present he is working toward his Bachelor of Science-Honors Degree, a five-year course.

Being enrolled at a university has not diminished his love of adventure and travel. Last December he "surprised" one of his older married brothers in Sydney, Australia, by dropping in on him unexpectedly over the Christmas holidays. Adding frosting to the cake, he then flew off to Singapore in time to spend New Year's with his other brother who was serving there with the Australian Army.

"I hope to get a job which entails travel, either as an engineering representative, flight engineer, or overseas base engineer," he says.

At 22 Conabeer has already flown to places many of us can only dream about. It is a safe bet that he'll visit a lot more far-away places in his lifetime.

"What I really want to be is the chairman of BOAC. If you aim high and fall short you are still doing well," he philosophized.

Right now he says he is getting a lot out of his experience at WPI. He admits that it is quite a change from City.

"Pressurized," was his description of WPI after he was introduced to the work load doled out by the professors. "City University is tougher regarding the content of the courses, but WPI has by far the greater bulk of work," he explains. "But it doesn't concern me too much as we're in America for only one term. We can make time for other things."

How does he rank the administrative staff and the professors of the two schools?

"Competence is equally high when it comes to evaluating the staff and the professors," he continued. "Both are reasonably informal. However," he hesitated, "the professors in England are not as friendly as they are here."

Generally he feels that the texts used are comparable while WPI facilities are "slightly better."

When asked about Gordon Library, he replied, "Oh, it is much better equipped than ours, with its music room and tapes and everything."

On the other hand, he thinks that the laboratories are superior at his English university.

George Conabeer

And the dormitories? "At City we all have single rooms," he said. "The conditions are approximately the same in both places, although Stoddard is especially nice. Actually," he went on, "WPI reminds me of City in a number of ways. Especially in one respect."

What was that?

"The number of girls on campus. At City we also have only a few. Not enough girls on either side of the Atlantic!"

Then he prefers a co-ed campus?

"Yes, yes, yes," came the prompt reply. "U.S. girls are so much less inhibited than English girls," he added, grinning.

He admitted that he had made many good friends among WPI students. There was something about the Americans that troubled him, though. "They take sports far too seriously," he remarked. "Sports are much more fun at home."

By sports George means "beer drinking, girls, and gliding. In that order. As a matter of fact," he says, "one of the other exchange students, Nabil Hamadeh, is a drinking companion of mine."

When discussing part-time job opportunities over here and over there he said, "All of the English students receive either a government grant or a salary from a company while they are enrolled at a college or university. At City part-time jobs for students are very rare. At WPI they are good. Off-campus jobs are similar, while American wages are higher."

How was he taking to the American way of life? "I'm enjoying social life a lot more here," he admits.

Perhaps one of the reasons he is enjoying himself is that he is favorably impressed with Worcester. He says that it is a pleasant change from central London.

American food he is *not* terribly impressed with. Of campus food he says, "When it's good, it's great, but when it's bad – eck!"

Off-campus vittles fare somewhat better, especially those from the fast food emporiums. He describes those three-minute delicacies as "appetizing, different, plentiful" and admits to being particularly fond of grinders.

American TV? "Too many commericals."

Drugs? "More of a problem on American campuses."

Election? "Carnival."

George Conabeer is doing very well right now as an exchange student at WPI. He says the program "has exceeded my expectations: social life good; people friendly and hospitable; courses very good; beer palatable; and girls amiable."

He's even been trying to persuade some of his new American friends to attend City University for a term.

Perhaps, then, because of his progress and enthusiasm, he can be forgiven for characterizing WPI as pressurized. Particularly since he classified the typical English college as pre-ordained!

FOR EIGHTEEN YEARS I have lived in a village on the Wirral peninsula near Liverpool in Cheshire," says 20-year-old Paul Sparkes. "Our family consists of my mother, father (a master mariner), an older sister, and, of course, myself."

From left, George Conabeer, Paul Sparkes, John Bertrand, Nabil Hamadeh, Derek Lawrence

Sparkes attended primary school until he was eleven. Then he went on to grammar school where he took ordinary and advanced level exams. Three years ago he moved south to London where he entered the City University to take an honors degree in air-transport engineering.

The course that he is presently taking is alternated with periods of industrial training at British European Airways, the company which is sponsoring part of his education.

To Paul Sparkes, WPI appears to be optimistic.

He thoroughly agrees with George Conabeer about the first-rate quality of Gordon Library. He calls it incredible.

"At City, library facilities are bare at best; but the labs there are exceptionally good."

So far he has been well pleased with the exchange program, even though he has sensed a difference in the approach to education. "The systems differ greatly. The American professors specify more work to be done, while the English professors expect the work to be done without stating it."

He describes the WPI campus as "very handsome and somewhat reminiscent of City. But it is the people who make a college different," he explained.

People such as girls? he was asked. Well, he did like a campus where there were girls. "To be honest, the American girls have so impressed me by their approach I have forgotten what English girls are like. I find American girls incredible," he chuckled.

His comment on the drug problem was, "Americans don't seem to care."

Unlike Conabeer, with whom he shares an apartment in London, he finds Worcester and the surrounding towns "not too attractive." But he did agree that the off-campus eateries did have better food and much better service than could be found on campus.

Sparkes, who flies as a hobby and dreams of becoming a commercial pilot, apparently has discovered that WPI can be both fun and academically stimulating.

"At City," he says, "the atmosphere is much more restful."

He didn't sound one bit disappointed that somehow, WPI had been different.

MY FAMILY was a little worried about my coming here," says Derek Lawrence. "This probably stems from the violent image American life has in England. However, they realized that it was probably the chance of a lifetime and for this reason they were very pleased when I was selected for the exchange program. My friends at first thought I was stupid, but when they realized I was really coming here, I began to notice some envy."

Lawrence, one of a family of four children, is the only exchange student presently on campus who was born and raised in London. His father is employed as a draughtsman in the electricity supply industry and his mother works as a shorthand-typist in a school.

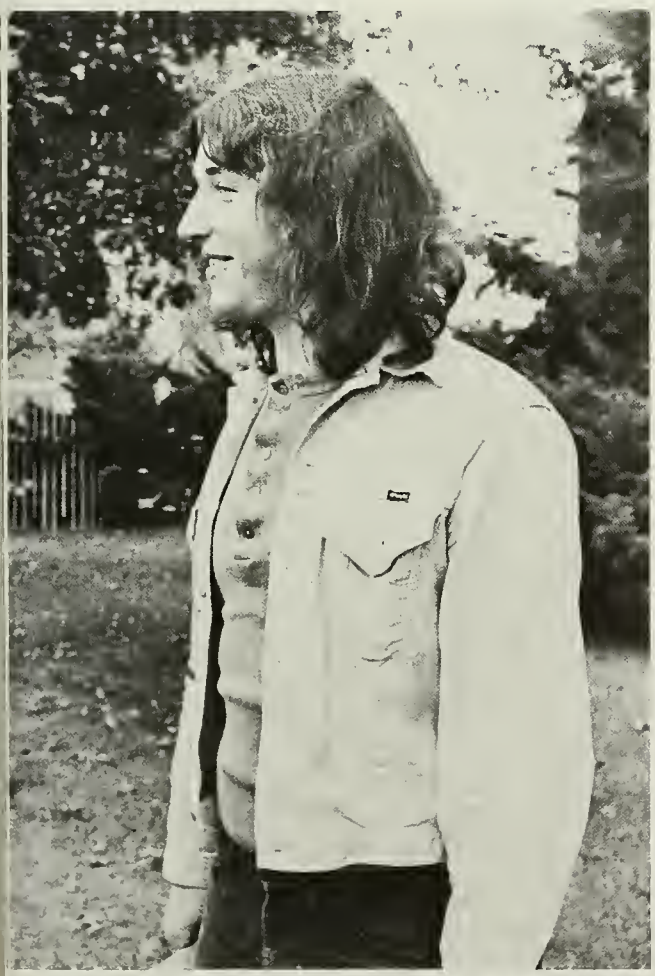
He went directly from grammar school to the City University to study electrical and electronic engineering on an integrated four-and-one-half-year work-study course. His sponsor is British Insulated Callenders Cables, Ltd. (BICC), a company which makes cables and associated equipment. It is a large firm employing some 60,000 persons in Great Britain. It is connected with the General Cable Corp. of America and owns Phillips Cables of Canada.

The 21-year-old junior says that he first heard about the exchange program through an advertisement in *Newcity,* which is the City University equivalent of the *Tech News.*

"I'm glad I followed up on that advertisement," he admits. "The program has been much better than I thought it would be. The big surprise to me has been the friendliness of everybody we have met."

After several months of study in America, he has come to believe that WPI students have to maintain a fast pace because of the seven-week terms. "At City," he continued, "the student gears himself to the examination at the end of the semester."

Would English students spend their free time in the same way as American students?



Derek Lawrence

"As far as movies go, yes," he replied. "Actually, we go to the theater more often because it is cheaper in England. We have fewer sports and do little camping because the weather is seldom good enough. All the students can drink at 18," he said, "so they go to the pubs. Also there are more discotheques at home, which are popular haunts, too. Personally I enjoy photography and doing mechanical work on cars."

When queried about drugs he answered, "Drugs are far easier to obtain in America and for this reason more people appear to take safe drugs. The situation is similar in both England and America with hard drugs."

Lawrence believes that American girls are more outwardly friendly. "In England," he says, "if a girl has a steady boyfriend, she will not go out with anybody else, but here it is not the case. The American girls are more independent. They seem to respond faster to a growing relationship."

An electrical engineering major, Lawrence hopes someday to "find a job that I enjoy which is sufficiently rewarding to enable me to enjoy life." He intends to find that job outside of Great Britain.

He appears already to be enjoying his visit to WPI. In fact, he says, "I have had a really great time here so far and I wouldn't think twice about coming back. I shall certainly recommend the exchange program to all my friends at City University."

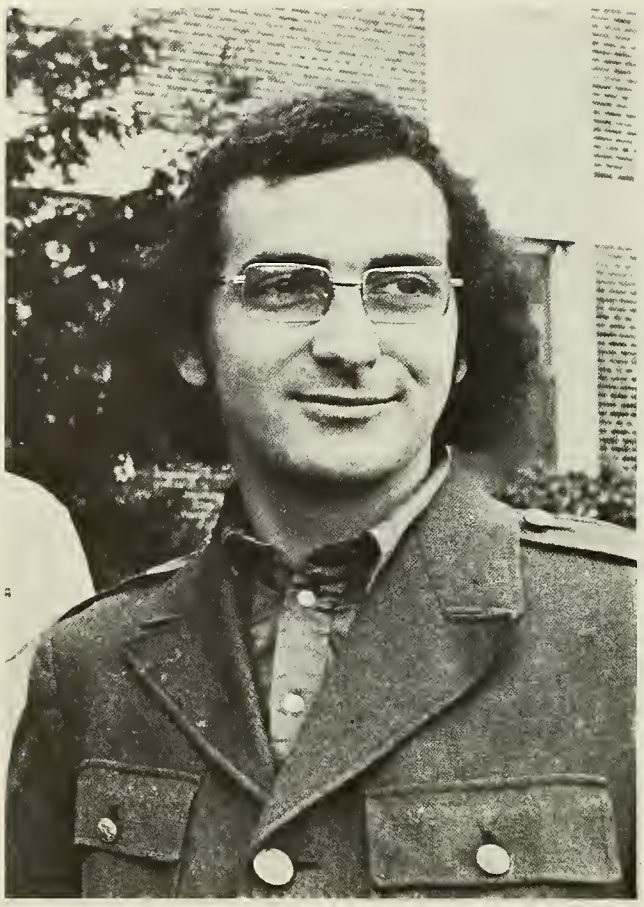
"PEOPLE HERE seem to enjoy work more," comments Nabil Hamadeh, a junior in air-transport engineering. "And they are quite mobile. They drive long distances for a weekend or even a day out."

After making the second observation he added almost wryly, "Cars here are not made to last and they don't!" (A thought which has undoubtedly crossed most Americans' minds!)

Hamadeh moved to England from Jordan in 1968. For two years he studied at Blackpool College of Technology and Art. At Blackpool he played on the varsity basketball and table tennis teams.

Later he was admitted to Manchester University, where he studied aeronautical engineering for six months. Last year he transferred into the air-transport engineering course at City. Although at Manchester he was taking the straight three-year course, at City he is now starting out on the work-study plan and is awaiting an industrial sponsor. He is not eligible for a government grant, so he is currently paying his own way through college.

Hamadeh is fully in favor of the student exchange program. But he disagrees with the other London students when it comes to comparing the curriculums of City and WPI.



Nabil Hamadeh

"Considering the amount of free time available at WPI, the curriculum is much more rigorous at City. Also," he continues, "I'd rate the facilities here as only good. At home they are very good to excellent. The problem at WPI is that there is no student union building. We have a good one on our campus."

All in all, he does approve of WPI in particular and the Worcester area in general. "It reminds me of the Surrey area in England," he comments.

When comparing English and American girls, Hamadeh notes: "English girls are more formal, especially with dress. American girls are more attractive than beautiful. They have slightly masculine features, which give them a different style."

He has discovered that diversions in the two countries are varied. He says, "The British spend more time in the pubs. The Americans spend more time on the playing field. I myself like to swim and play soccer, snooker, and tennis. I also like to drink and go out with girls."

Like the rest of his fellow students from the City Univeristy, he was interested in the quality of beer in both countries. While the majority thought that American beer was palatable, they agreed that in England there was much more variety available.

In spite of this "shortcoming," Nabil Hamadeh has found the exchange program "quite impressive. The academic and social life have been outstanding and I wouldn't hesitate to recommend the Plan to anyone."

WHEN John Bertrand, 22, announced to his family and friends that he was going to America, they were aghast.

"We think you have courage, but what about your sanity?" they inquired.

Undoubtedly Bertrand recalled those remarks when, finally in America, he caught sight of his first armed policeman. (In England they go unarmed.) But he stayed anyway, and he has not been disappointed.

This natty dresser from Northampton says that he was "a standard English kid." At 16 he received his general certificate of education — ordinary level and at 18 he passed the advanced level.

At City he is taking a five-year "thin sandwich course" which includes six months of academic work alternating with six months of study which will ultimately lead to a BS in civil engineering.

During his industrial period he works for a contracting civil engineering firm. The company pays him during the work portion of the program. During the academic term at City his expenses are paid by an outright government grant, which, he is happy to say, does not ever have to be repaid.

His industrial periods have taken him to Coventry, Nottingham, Cambridge, and to his own home town of Northampton. He has worked on reservoir, subway, sewerage, and large water tank projects.

Bertrand considers that the exchange program and WPI have been very good experiences. "The program has made me realize the differences in our educational systems," he says. "Because of the volume of knowledge that has to be

John Bertrand

lorthampton Hall, City University of London

Periodicals Library with Celestial Globe, City University

Across Northampton Square, the University Building, opened in 1970

covered in seven weeks, WPI has the harder curriculum," he continues. "On the other hand, City University work is more difficult in terms of in-depth consideration."

He agrees with his countrymen that the lack of a student union at WPI is a distinct disadvantage.

"At City our student union is excellent. It has a bar-lounge that seats 250; a TV room; music room; dark-room; and a snooker, table tennis and billiard area. There is an art center and student information desk. The building also houses the offices of the student-elected committees that organize student affairs."

"The double-room dormitory accommodations at WPI are very good," he went on. "However, I prefer the single rooms at City. Also I like the idea of having sheets and blankets provided free like they are at home. I don't like the limited visiting hours at the dorms. (Nobody is allowed in your room after 2 a.m.) And having porters at the dorm entrances is sometimes good, sometimes bad."

Afterhours, according to Bertrand the average English student is more likely to be found quaffing a beer at a pub or competing at a game of darts than engaging in the rough and tumble sports to which his American counterpart is addicted.

"We rarely engage in team sports," he says. "It's too difficult. The nearest playing field is five miles away from the campus.

"All of us enjoy bird-watching, though," he smiled. "Even the WPI students."

Birds like robins and blue jays? he was asked. "No. Like blondes and brunettes."

He admitted that he was attracted to American girls but felt there was too much similarity in their manner of dress. "English girls," he explained, "are more conscious of their clothing and themselves. They like their hair and makeup to be different from the next girl's."

Some of Bertrand's passing remarks about the American scene: "There is a vast difference between English and American beer. American beer is like German lager beer, less fattening than the twenty-ounce servings of English beer, which is made from hops. — American drivers like to hear their tires squeal. — Electrical goods, records, and jeans are cheaper here. — In America the days seem longer because everyone works and plays harder."

John Bertrand doesn't seem to mind the length of American days — or nights. He's making the most of them.

EVERYONE ELSE was as thrilled as I was when I was selected as an exchange student," says Keith Corman, '73, one of the first WPI participants in the exchange program.

Keith, whose future ambition is to be self-employed in the field of construction and development, is a civil engineering student from Bolton, Mass.

How had he heard of the exchange plan?

"One day a professor mentioned the program to me," he explained. "It sounded interesting so I filled out an application. After being interviewed by a selection committee and recommended by two faculty members, I was told that I had been accepted. Before I knew it I was winging my way to the City University of London."

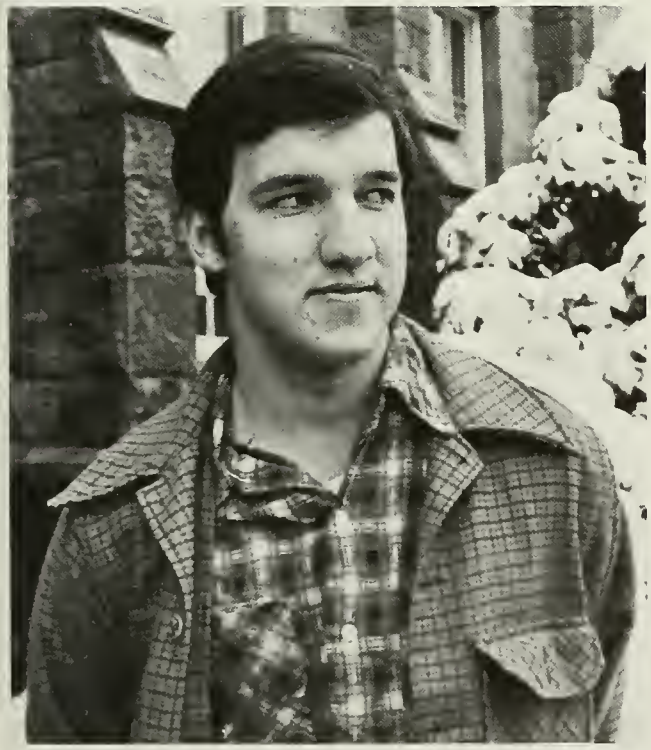
"In the beginning I didn't know what to expect," he said. "I wanted to do some traveling. I wanted to meet people. I wanted to live and study in a different environment. The exchange program let me do all those things. It made me very happy."

Corman lived nearly five months in London. He had time to get to know the people around him, time to get to know City University.

Comparing City to WPI he says, "City is apt to be more tradition bound. WPI is more inventive. Engineering subjects are difficult no matter where they are taught. Courses at both schools seem to be of equal depth. But WPI has a much more diverse curriculum by far."

At City he was interested in the differences and similarities between the two schools that he noticed almost daily. One of those differences concerned the faculty.

The WPI professors are definitely better according to his judgment. He found the professors at City were reasonable but not exceptional when it came to attitude and competence. Keith feels that they probably make better engineers than teachers.



Keith Corman

He has kinder words for the English textbook system. He says, "In general English students are not required to purchase books. The instructor will usually recommend several texts that may be consulted in the library. These books are mostly by American authors, so they are no better or worse than those used at WPI."

Corman was amazed that City University, which is about the same size as WPI, has the capacity to house twice as many students, all in single rooms. "And they even provide daily maid service in the dorms," he recalls.

He was equally enthusiastic about the English student union (described earlier), which seems to provide almost every diversion any hard-working student could wish, including daytime movies and four cafeterias.

"Compare that with Daniels Snack Bar," he comments.

Was there a difference in attitude between students at City and WPI? "Particularly in the area of student government," he remarked. "City students take student government participation more seriously than we do here," he explained. "Over there student government meetings draw nearly 60 per cent of the student population. I believe this is because their government is completely independent from the administration. Their government is an instrument of the students and not an instrument of the administration, as it is here."

Commenting on how the exchange program was handled he said, "I did have a wonderful time and I did learn a lot, but things could be improved."

He explained: "Naturally the administrators of the program are interested in the scholastic angle. I believe this should be played down a bit. London is a beautiful place. There is plenty to do and plenty to learn from just being there. If future exchange students have the chance to travel as I did (Scotland, Germany, and Scandinavia) they could learn a lot more. It's a once-in-a-lifetime opportunity.

"I would break down my educational experience like this: 10 per cent in the classroom and 90 per cent outside. Therefore in choosing future exchange students, scholastics should be a lesser factor. Students should be selected according to their sincere desire to go, no matter what the reasons."

JAMES SHARON, a civil engineering major whose career goal is "to be a registered professional engineer and enjoy my job," has found that while "the City University is slow, WPI is difficult."

Prior to entering WPI Sharon attended Marlborough (Mass.) High School. Like Corman he was a varsity athlete, earning letters in football, baseball, and basketball.

His out-of-school activities included billiards, reading, golfing, and a summer job with the Marlborough Forestry Department.

At WPI he played baseball as a freshman. Now a senior, he looks back on his months in London mostly with pleasure. "The atmosphere at City was decidedly different," he says.

In spite of the "difficult" rating he gave WPI, he discovered that English students at City have their problems, too. For example they have very little choice in deciding what courses they are to take. "At WPI we can at least choose our courses more freely."

He had a mixed reaction to the English girls, remarking that "English girls aren't as pretty as American girls on the average. And they are much harder to get to know. But once you do get to know them. . . well, that's a different story!"

Sharon felt that he and the other WPI students had been well received on campus and that the exchange program had been beneficial to him, both academically and otherwise.

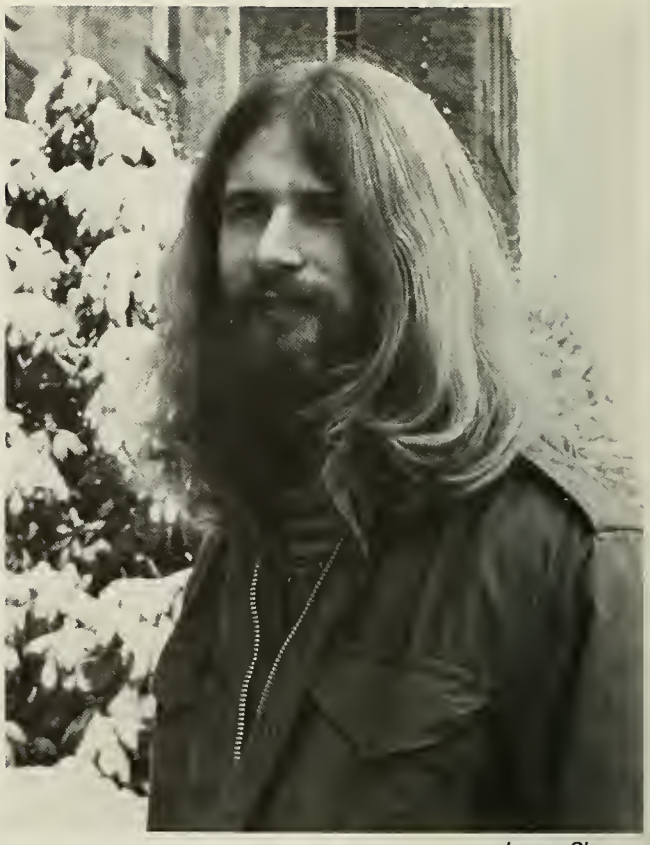
"I managed to get in a considerable amount of traveling on the side," he says. "I went through all of England, Scotland, Belgium, and Holland, which was an education in itself."

He says he would recommend the program to a friend "if it wasn't an important semester at WPI. But if he were going to England, there is one thing I'd have to warn him about."

What was that?

"The weather. It's rainy."

English-born George Conabeer was more explicit than that. He called it *stinking!*



James Sharon

Ron Bohlin

"I WAS AMAZED at the poor picture they [the English] seem to get of what the U.S. is like," says Ron Bohlin, '73. "It's not at all accurate. I was surprised by the number of people who wouldn't want to visit America."

Bohlin's life in America has been a good one. A small town boy (from West Boylston, Mass.), he has always immersed himself in whatever activities were available. While a student at West Boylston High School, he ran cross-country and was a member of the soccer team and the chess club. He also belonged to the Varsity Club, yearbook staff, and the mathematics club.

He even found time for a job as a ski instructor at Ward Hill in Shrewsbury.

Once enrolled at WPI, he was off and running again — this time in freshman track and football. He joined Phi Gamma Delta Fraternity and the ski club. Last summer he took a job with the American Telephone & Telegraph Company in Boston.

Ron Bohlin's life so far has been busy and varied. He has found the spirit of America definitely to his liking. But, after recovering from the shock of what the British thought of his country, he fitted himself rather easily into campus life at City. "Friendships followed a very natural course. We weren't special and we weren't odd-balls.

"The university dormitories were exceptional," he continued. "So was the student union. But the rules were a bore. At home the dorms are lacking in facilities for both academic and free-time pursuits; however, WPI does allow the necessary freedoms to make up for it."

City University itself goes in for ultraspecialization, which is not good, he feels. "At WPI we have a better educational experience, but we do not get as much specific knowledge," he declared. "Also I think that WPI is more demanding in the course work required and in the actual time spent doing mechanical things. The City University seemed to require much more piecing-together of the relevant aspects of the theoretical. This is a direction in which WPI appears to be moving, and that is good."

At WPI Bohlin is majoring in management engineering. In England he attended the Graduate School of Business at City. His ultimate goal is to end up in the field of business administration, possibly in staff-nature management or consulting. He is also keeping his options open. He may work for his MBA or DBA degrees so that he could go into college teaching.

Because of his interest in teaching he took a hard look at the professors and staff at City. His verdict? "At WPI they seem far superior in every respect."

Regarding textbooks he says, "The English system appears to rely much less on textbooks and much more on lectures and related research."

Bohlin is a sports buff (skiing, tennis, and mountain climbing) and as such was interested in the sports program at City. "Over there they are less competitive," he says, "and not well organized, but they do encourage participation. At WPI we are more competitive and organized, but more dedication is required, too."

High Voltage Engineering Laboratory and electrical and electronic engineering buildings, City University

Comparing the habits of his English friends with those at WPI he observes: "The English do not travel nearly as much as we do. That's the most obvious thing. Also they tend to study less per night and spread things out more, even to the point of studying on the weekend. *[! – Ed.]* At WPI we will cram for a night and then do nothing the next night.

How does he feel about the exchange program now?

"I got from the program everything I wanted and expected," he replied. "It did require a bit more manipulating on my part than I had bargained for, because no one was really ready for us and we had to make all our own arrangements."

He felt that the British students had somewhat of an edge over the WPI students in the program. "They have sponsors who pay for their expenses," he explained. "We had to pay our own way. Also the grades they received at WPI don't count toward their graduation. The grades we received at City do."

He laughed, perhaps a bit enviously. "No wonder they're having such a great time over here." But he thought for a moment and then remarked: "Oh, well, no matter. I had a great time over there, too."

As THE EXCHANGE PROGRAM moves into its second year, the cross-pollination of ideas between WPI and City University students increases. As the participating students have noted, the exchange program offers them a unique opportunity to expand their personal horizons, partly by exposure to another college and another educational tradition, but mostly by the fact of living in a different country and being able to experience first-hand the strengths and diversity of a different culture. ■

Semester Abroad

"NEXT YEAR I'M GOING TO TAKE A COURSE IN ITALIAN BEFORE I COME OVER HERE."

"I'VE GOT SO MANY PRESENTS TO BUY FOR RELATIVES, I DON'T HAVE TIME TO GO TO CLASSES."

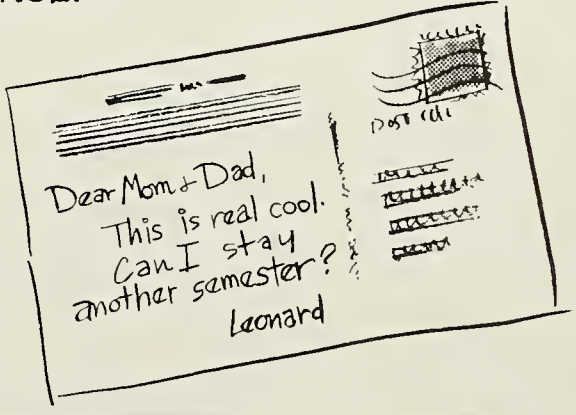
"NO WONDER WE AMERICANS GET A BAD NAME. LOOK HOW THOSE TOURISTS ARE DRESSED."

"I'VE SEEN IT ALL ON T.V."

"HE WANTS EXTRA CREDIT BECAUSE HE SAYS SEEING THE FOLLIES BERGERE IS AN EDUCATIONAL EXPERIENCE."

"I JUST MET THE DREAMIEST GUY FROM STANFORD."

"I'M GETTING A LOT OUT OF THIS --- LIVING THE WAY THE NATIVES DO."



Pidgeon

A Story: DeVilleroy at the Drawbridge; Orr, Watt's in Your Name?

By Anonymous

(With tongue-in-cheek apologies to the following members of the WPI Alumni Association.)

DeVILLEROY and his HARDY TROOP sat DOWNE on the LONG STONE BENSCH. The WATERS did RIPPLE AGIN and AGIN against the BANKS of the POND as the FURST STARR ROSE.

"I PRAY YULE GRANT us the WRIGHT to HUNT and FISH for CHOW, your GRACE," said GALLANT BARON McDONALD. "We've had NARY a SWALLOW since DAY began. MAY we go?"

PRINCE DeVILLEROY'S PAN showed TRUE PAINE. His eye did PIERCE the VALE of KNIGHT.

"In the LITE FROM BURGER CASTLE on the FARR SHORE I CAN see the KING, his CHAMBERLAIN and the SARGENT DOWNING BACON, BUCK, and BEERS. They'll be FULOP on the MORROW. They'll POPP their ARMOUR and we SHELL WIN the BATTLE."

The PRINCE did PRESS McDONALD's RIST. "As for you, FRIEND," he said, "Take the BEST KADETS to that BALDWIN APPLEYARD in the VALLEE. Fill these SACKS with LOTZ of PICKENS. And let no PERSON UTTER ORR HASZARD a sound. KING ARTHUR and his HENCHMAN GAMBLE that we are WEEKS WEST of this PARK. Yet NOTT but the BLACK of this JUNE KNIGHT is our SANCTUARY."

"OMAN," McDONALD exclaimed. "I'll take BETTS that each OFFICER and CADET WILL AMEND this RULE and seek to SHAIR MOORE. If they could FIELD a DOE —."

DeVILLEROY's TONE was CROSS. "No SCHOTT SHELL be HURD," he said. " 'Ere you WILL be a HUNTER STUCKE into a COFFIN with the ROYAL KING dancing at your WAKE!"

The GROOP LUEFT and were LONG gone. Upon their return they did CARY MOORE THAN the SACKS that were expected.

"The BRANCH PICKENS were WERME and SAUER but these FROM the BAKER's dozen were SWEET," explained McDONALD. "Meet SYLVIA, PENNEY, JOYCE, and GILDA, your GRACE. They COOK."

DeVILLEROY laughed. "Do they know a GILL FROM a FINN," he TEAZEd. "WATT

BRASS, McDONALD! We CAN NOTT COOK where we'll be SEIN by the COURT ARCHERs. And these HUSSEYs might HOLLER if they go. You FOX! I should KLAUBER you!"

The ANGELL with the BROWN LOCKE POLKing FROM HERR BONNET smiled and DeVILLEROY was a MOODY CRABB no MOORE. Even his JEALOUS HAIGHT of the KING who had stolen his JEWELL, "It EBBS," he thought.

But in the EARLY GRAY of DAY, the HAIGHT returned. He did LOVE the FAMILY DIAMOND that the KING did HYDE inside the CASTLE WAHL.

In a LOW BELLO DeVILLEROY commanded, "Let each ABEL MANN WAKE and so to BATTLE! Be WARY of the ROYAL ARCHERs. Sir HEBERT's swimmers will HACK the DRAWBRIDGE tethers so it WILL FALL and then the TROOPs CAN FORD the WATERS. Once inside the CASTLE either SLAUGHTER ORR CLAPP the COURT in IRONS. I'll get the FAMILY JEWELL."

The swimmers did HACK with HAMMER and STEELE the DRAWBRIDGE BONDS and it did FALL open half WAY. By then the ARCHERs on the CASTLE SPIRES had WOLK. They SCHOTT STORMS of arrows among the KADETS. The COURT CANNON roared, but no BALL or SHARP SHANK hit one MANN beneath the CAPE of FOGG.

"Neither our KADETS nor the ROYAL BRIDGMAN CAN get the DRAWBRIDGE up ORR DOWNE," reported SWIFT MESSINGER LENNY LIGHTFOOT.

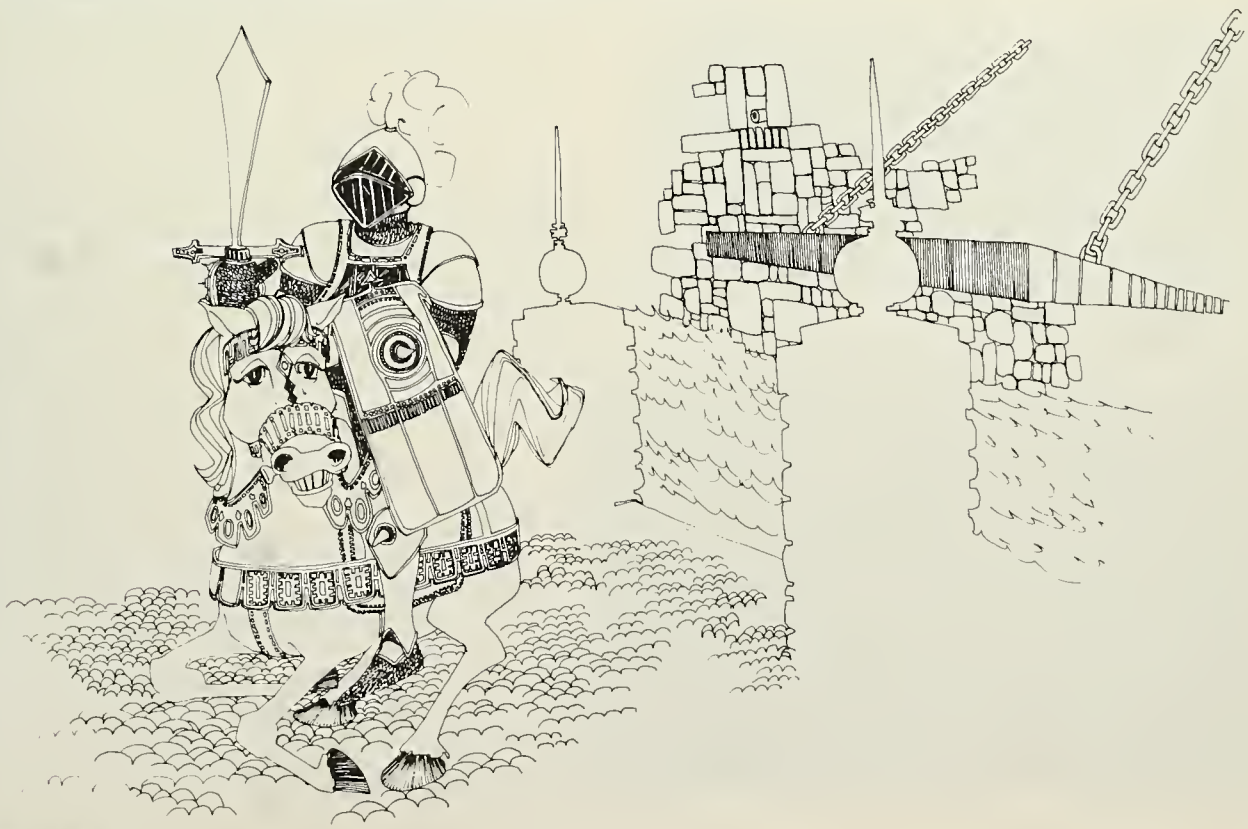
"I protest the LAK of LIBERTY in this BATTLE, the LAK of planning, and the LAK of food," interrupted DeVILLEROY's advocate, WILLIAMS KUENZLER.

"BUTTON up, BONE HEAD," DeVILLEROY demanded. "And you, McDONALD, tell the TROOP to break CAMP. In MAY when the FOGG lifts and the DRAWBRIDGE is DOWNE, we'll make a TRIPP back. By that time the BRAUNy Duke of NELSON-HALL WILL be ABEL to join us and give us HART."

"No WARR today?" his FRIEND asked, as he did PYLE SHIELDS on a STUMPP.

"No WARR today," DeVILLEROY replied. "The PRICE could be too GRIMM."

"AW NUTTs," sighed McDONALD who WOOD have to WAIT a while to be GALLANT AGIN. ■



The Hill

If you haven't been back to campus in the past couple of months, you will be surprised at what's happened to Boynton Hill. The city of Worcester is making Institute Road, which skirts the southern edge of the campus, into a major traffic artery. To cope with the increased traffic flow and increased vehicular speeds anticipated, they have taken over a part of the base of the hill, nearly straightening out the curve at that point. The photographs on these pages show some of the stages in the work on the hill. A retaining wall is to be constructed along the edge.

This is a move which all of us at WPI were concerned about, but determined action by the college administration in cooperation with city officials resulted in a compromise that successfully retained much of the land—and the trees—originally scheduled for removal.

This action comes at a time when WPI has petitioned the City Council to close off West Street at Institute Road (see November *Newsbriefs),* in order to reduce traffic hazards and unify the two campus "islands" on either side of West Street. The college hopes that the closing of West Street and the takeover of part of the hill will, in essence, represent an exchange of land in the public interest.

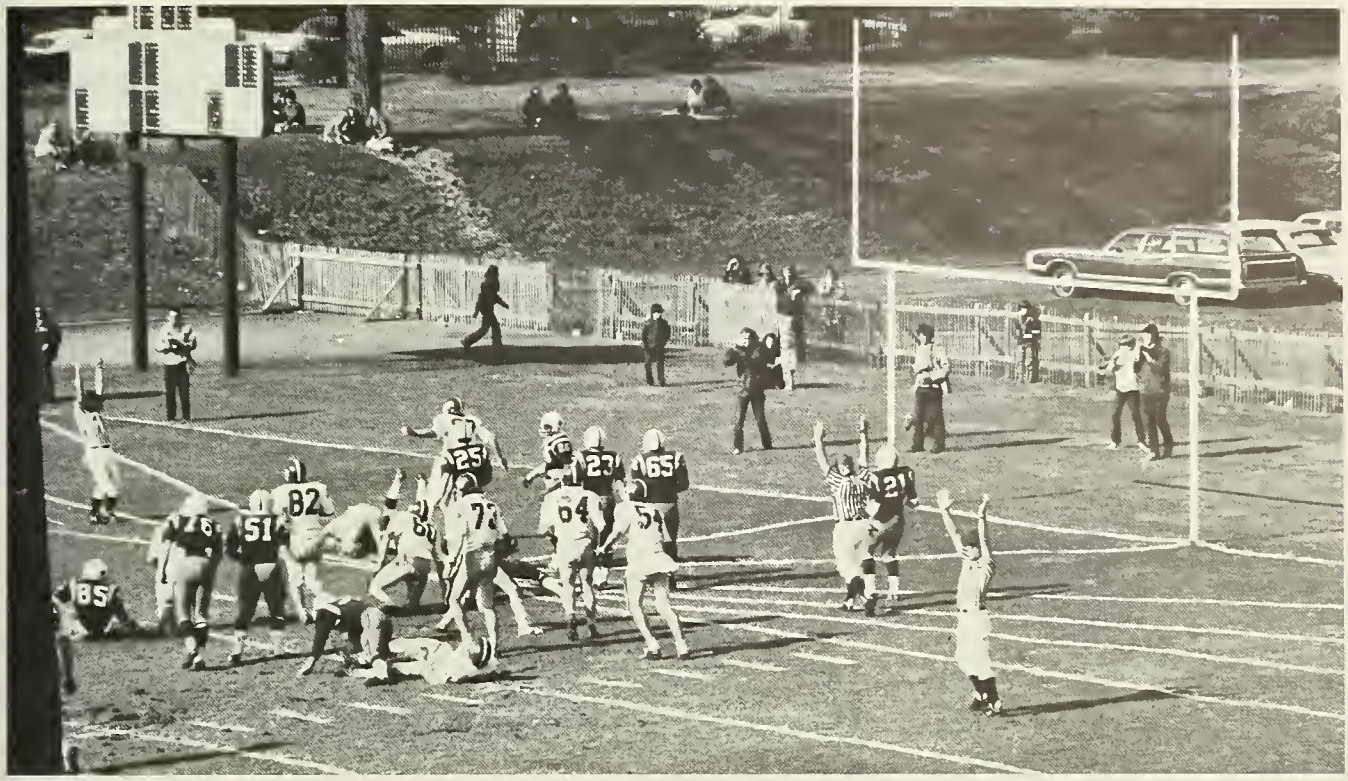
A remarkable view showing the extent of the cut — and the city's reasons for wanting to straighten out the the street.

The former — and future — location of Institute Road

Homecoming 1972

We won the ball game,
and everyone had a ball.

Mr. and Mrs. Ken Blaisdell, '40,
Winners of the Tailgate Picnic Competition.



COMPLETED CAREERS

WILLIAM A. JORDAN, '02

William A. Jordan, the former New York sales manager for Essex Wire Corp. (Fort Wayne, Ind.), passed away in New York City on October 13, 1972.

He was born August 31, 1876 at Sutton, P.Q., Canada and graduated in 1902 as a mechanical engineer from WPI where he was a member of Phi Gamma. Delta Fraternity.

Prior to his 30-year association with Essex as New York manager, he saw service as a sales engineer for Anaconda Wire & Cable Co., New York City. At one time he was a partner in Jordan and Wilds, Sales Engineers, New York. For two years he was also vice president, United Motors Service Division, General Motors, Detroit, Mich. Other companies he was associated with were American Vulcanizing Fibre Co., Wilmington, Del.; Charles Warner Co., Wilmington; Stephen T. Williams & Staff, Industrial Engineers, New York City; C. W. Hunt Company, Staten Island, N.Y.; and Sullivan Machinery Company, Claremont, N.H.

From 1962 until his death he was a consulting sales engineer for Essex Wire Co.

Mr. Jordan, who was a former president of the New York chapter of the Alumni Association, was a life member of ASME. He also belonged to the Empire State Society, Sons of the American Revolution and the New York Athletic Club.

CHARLES L. TUCKER, '06

Charles L. Tucker, 89, died August 13 in Worcester.

A North Brookfield native, he graduated from WPI and was later employed as a chemist for Felton & Son Distillery, Boston, for more than 50 years prior to his retirement in 1954.

He was a member of the American Chemical Society and The Tech Old Timers Club. At one time he was on the Board of Managers of the Boston Chapter of the Alumni Association.

HOWARD B. WARREN, '09

Howard B. Warren passed away on May 7, 1972 in Mobile, Alabama.

He graduated from WPI as a chemist. After working for a time as a chemist, he took over the operation of an X-ray laboratory. He retired in 1950.

RALPH D. WHITMORE, '09

Ralph D. Whitmore, 84, an eminent mechanical engineer in the motion picture industry for three decades, died in New York City on October 13, 1972 following a long illness.

He was born in Sunderland, Mass. As a student at WPI he was president of his class and of Theta Upsilon Omega, now Sigma Phi Epsilon. He was also a member of Sigma Xi and Tau Beta Pi.

After receiving his MS in engineering from WPI in 1911, he taught at Tsing Hua College in Peking, China, until 1917. Back in the U.S.A. he taught engineering at WPI. From 1929 until 1960 he was in charge of machine design and film processing in the New York laboratories and in research and development of 20th Century-Fox Film Corp.

In 1961 he received an Academy Award for outstanding technical achievement in the conversion of Cinemascope and in 1966 he was elected a Fellow by the Society of Motion Picture and Television Engineers.

During World War II he served as chief of design section at Harvard University in the Underwater Sound Laboratories for the U.S. Navy.

Mr. Whitmore was a civic leader in New Rochelle, N.Y., and as director of the Charter League, he successfully pressed for civic reform, resulting in the establishment of the city manager form of government. He was president of the East End Association and the New Rochelle Scholarship Fund.

He was a professional engineer in Massachusetts, a member of ASME, and served as a consultant for the U.S. Signal Corps and the National Film Board of Canada.

FRED W. KENNEDY, '11

Fred W. Kennedy passed away May 7, 1972 in North Carolina.

He was born June 3, 1888 in Brockton, Mass. He graduated from WPI as a mechanical engineer and worked for American Steel and Wire, Worcester, for four years. For 31 years he was with Graton & Knight Co. Later he joined Hans Rees' Sons in Asheville, N.C., as a superintendent. In 1956 he retired as works manager from W. E. Byron & Sons of Maryland, Williamsport, Md.

Mr. Kennedy was a member of Alpha Tau Omega Fraternity and Tau Beta Pi.

ROGER E. KING, '11

Roger E. King, 84, passed away September 24, 1972 in Worcester.

A Worcester native, for many years he worked in the former Worcester Bank & Trust Co. Until his retirement in 1950 he was with George A. Smith Co.

ERNEST B. NORTON, '15

Ernest B. Norton died May 2, 1972 in Eureka Springs, Arkansas.

He graduated from WPI as an electrical engineer in 1915. For a number of years he worked as a purchasing agent for the Milwaukee & Suburban Transport Corp. in Wisconsin. He retired in 1961.

E. TAYLOR WARREN, '15

E. Taylor Warren, 78, the former president of the U.S. division of Tata Iron and Steel Company, New York City, died July 29, 1972 in Bridgeport, Conn.

Mr. Warren was born in St. Albans, Vt. in 1894 and was later graduated from WPI as a civil engineer. He was a member of Skull and Sigma Alpha Epsilon. For 11 years he was a blast furnace consultant for the Tata Company in Jamshedpur, India. While in India he was financial chairman of the Vellore Christian Medical College and Hospital.

Mr. Warren was a past president of the Pittsburgh Chapter of the Alumni Association, and a member of AIME and the Eastern States and Chicago Blast Furnace and Coke Oven Association.

HAROLD M. TOOMBS, '16

Harold M. Toombs, 78, chief engineer at Chicago's Conrad Hilton Hotel for 28 years, died in October in Oak Park, Illinois.

A native of Brooklyn, N.Y., he graduated from WPI as a civil engineer. During his

lifetime he was chief engineer at three of the world's largest organizations of their kind: The Western Felt Works; the Chicago Division of Armour & Co.; and Chicago's Conrad Hilton Hotel.

Mr. Toombs was noted throughout his profession as an expert in mechanical refrigeration. He wrote articles on the subject for the *National Provisioner* and was author of a textbook used in a home study course in air conditioning and refrigeration.

He was a member of Phi Gamma Delta, the Chief Engineers Association, and the National Association of Practical Refrigeration Engineers.

CHARLES HOLLERITH, '17

Charles Hollerith, chairman of the board of Hollerith-Willis Printing Co., Jackson, Michigan, died March 29, 1972.

He was born in Washington, D.C., on December 30, 1893. In 1917 he received his BS in mechanical engineering from WPI where he was a member of Alpha Tau Omega Fraternity and Tau Beta Pi.

During his career Mr. Hollerith had been president of the Magnechase Corporation, Jackson, Mich.; vice president of Walstrom Products, Inc., and Walstrom Marine, Inc., Harbor Springs, Mich.; vice president and director of Aeroquip Corporation, Jackson, Mich.

He had also been associated with Hayes Industries, Inc., in Jackson, Midwest Engine Company and Nordyke and Marmon, Inc.

Mr. Hollerith designed products and equipment that helped to revolutionize a number of industries. Millions of automotive mufflers sold by Hayes Industries to leading automotive firms included one or more of his inventions. The Walstom firm manufactured the marine accessories he designed and Aeroquip marketed a breakaway coupling that he patented. Aircraft wheels and brakes and other parts used exclusively during World War II on B-17, B-24, B-29 and B-32 bombers were his invention. Hotpoint took out a license to manufacture the Hollerith dishwasher and Yardman, Inc., has been producing power mowers of his design for many years.

He also received patents on cooking appliances, printing equipment, and dinghy and davit stabilizing equipment for boats.

In 1963, having 75 patents to his credit, he was honored as one of Michigan's 55 outstanding living inventors. In 1964 he received the Robert H. Goddard award for professional achievement from the WPI Alumni Association.

Mr. Hollerith was a member of the American Institute of Aeronautics and Astronautics, the Society of Automotive Engineers and ASME. For many years he was a leader in the Junior Achievement program in Jackson, Mich.

MALCOLM J. QUIMBY, '20

Malcolm J. Quimby, 75, passed away suddenly on August 6 in New Bedford, Massachusetts.

Mr. Quimby, who was born in Wildwood, New Jersey, graduated as an electrical engineer from WPI. For forty years he was employed by the New England Electric Co. and the New England Power Co.

As a resident of Sharon, he served as a water commissioner for a number of years.

ALBERT H. PENDLETON, '23

Albert H. Pendleton, a retired partner in the law firm of Pendleton, Neuman, Williams & Anderson, Chicago, passed away October 10, 1972.

He was born in Lebanon, Conn., on March 15, 1901, later graduating from WPI as an electrical engineer. He also graduated from Duquesne Law School in 1927.

From 1923 to 1927 he served as an associate attorney in the Patent Department of Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa. From 1927 to 1972 he was a partner in the firm of Pendleton, Neuman, Williams, & Anderson. He retired in January, but remained as counsel.

Mr. Pendleton, a former president of the Chicago Chapter of the Alumni Association, was a member of the American Bar Association, Chicago Bar Association, Patent Law Association of Chicago (President 1957), Bar Association of the Seventh Federal Circuit, American Patent Law Association, and American Judicature Society.

URBAN R. LAMAY, '25

Urban R. Lamay, 68, passed away in July in Drexel Hill, Pennsylvania.

He was born in Holyoke, Mass., and graduated with a degree in electrical engineering from WPI in 1925. After graduation he joined the General Electric Company in Schenectady, N.Y. He retired in 1969 as an engineer with the Philadelphia division of the company following 43 years of service.

Mr. Lamay was a member of Theta Chi, Skull, and the Quarter Century Robert Good Chapter of G. E. He was president of the Senior Citizens Club of Drexel Hill.

GEORGE L. SANDERS, '26

George L. Sanders, 68, of Natick, Massachusetts, passed away last summer.

He was a Western Union employee for 41 years. He was also a Mason and a member of the Natick Square Riggers.

LESTER G. JAQUITH, '27

Lester G. Jaquith died suddenly at his summer home in Annisquam, Massachusetts on August 12, 1972. He was 67 years old.

He was born in Clinton, enrolled at WPI, and was graduated from the University of New Hampshire. He was a member of Theta Chi Fraternity.

Prior to his retirement in 1969, he was a mechanical engineer at the U.S. Naval Shipyard in Charlestown.

RALPH V. KARLSON, '28

Ralph V. Karlson, 68, died in Bradenton, Florida, on August 17, 1972.

A Worcester native, he graduated from WPI as a mechanical engineer. He went to work for the Texas Oil Co. in 1928. In 1969 he retired as assistant chief engineer for Texaco.

LESTER W. FRANK, '29

Lester W. Frank, 65, died of gunshot wounds inflicted by an apparent would-be robber in Painesville, Ohio, on September 3, 1972.

The retired director of rates and economic research, Western Massachusetts Electric Co., Springfield, he was born in Boston and graduated from WPI as an electrical engineer. Mr. Frank was a member of Lambda Chi Alpha and the former president of the Connecticut Valley Chapter of the Alumni Association. He also was a member at large from that chapter and served on the Fund Board.

A registered professional engineer, his professional societies included the American Marketing Association and the Western Massachusetts Engineering Society.

ROGER T. GRISWOLD, '30

Roger T. Griswold, 66, died September 1, 1972 in St. Petersburg, Florida.

A mechanical engineer, he was born in Worcester and served a number of years as a design engineer at Pratt & Whitney Aircraft Corp., East Hartford, Conn. Mr. Griswold, who was retired in 1967, was a former trustee of Barrington (R.I.) Bible College.

DR. JOHN J. REARICK, '35

Dr. John J. Rearick, 58, a physician from Warren, Mass., passed away in Worcester on October 10, 1972 following a long illness.

He was born in Philadelphia, Pa., and later enrolled at WPI where he studied mechanical engineering. In 1942 he received his MD from Temple University.

He was awarded the Bronze Star among other decorations for his heroic service as a Captain in the Army Medical Corps in the Asiatic Pacific area in World War II.

At the time of his death he was engaged in general practice in Warren. He was chief anesthetist at Mary Lane Hospital, Ware. For several years he was a resident physician at St. Vincent Hospital in Worcester.

Dr. Rearick was a member of the Western Massachusetts Anesthesia Society.

ROBERT H. HOOD, '36

The president of R. H. Hood Co., Philadelphia, Robert H. Hood, died April 6, 1972 in Pennsylvania.

He was born in 1915 in Philadelphia and attended WPI where he was a member of Theta Chi Fraternity.

Mr. Hood was a Mason and a member of the Overseer Board of Sturbridge Village, Mass.

ALBERT L. D'AMOURS, JR., '57

Albert L. D'Amours, Jr., 37, passed away August 27, 1972 in Springfield, Massachusetts following a long illness.

He was born in Holyoke, studied at WPI, and was later employed by Oriole Engineering Co., Inc., of New England.

YOUR CLASS AND OTHERS

1926

WINTHROP S. MARSTON has retired from the National Park Service in San Francisco where he served as an electrical engineer.

1928

GIFFORD T. COOK has retired after serving 30 years as a civilian employee with the U.S. military establishment. He served most recently with the Air Force in Washington, D.C., where he was engaged in formulating and directing the military fire protection and aircraft ground rescue programs worldwide. He plans to spend the winter months skiing in the Austrian Alps.

1929

JOHN E. GILL has retired from his duties as a manager at Buffalo Forge Co., Buffalo, N.Y.

1931

FRANCIS J. BURGOYNE was recently chosen to fill the position of Clerk of the Works for the New Middle School which is being built in Lancaster, Mass. He is a former Lancaster building inspector and selectman and has had a wide experience in construction in this country and abroad. . . . WARREN N. DOUBLEDAY has retired as an electrical engineer for the U.S. Air Force. . . . HERBERT A. STEWART has retired as vice president of R. E. Phelon Co., East Longmeadow, Mass. He currently resides in West Tisbury. . . . RALPH HODGKINSON, director of craft demonstrations at Old Sturbridge (Mass.) Village, was guest speaker at the August meeting of The Sanbornton (N.H.) Historical Society.

1932

RAYMOND E. NICHOLS, who is a project engineer for the Kendall Company (now merged with Colgate Palmolive Co.), is currently located in Bethune, S.C.

1933

ARTHUR E. SMITH has been elected Chairman of the Board of United Aircraft Corp., East Hartford, Conn. Last year he was elected chairman of the UAC executive committee after serving as president and chief administrative officer since 1968. He joined the company in 1935.

1934

ROBERT B. LOGAN has retired as manager of maintenance and engineering at St. Vincent Hospital, Worcester, Mass.

1935

DONALD G. MacMILLAN was recently appointed full-time superintendent of the Auburn (Mass.) Sewer Department. He has served as a member and chairman of the town's Sewer Commission. He retired as a senior product engineer in the Electrical Cable Division of U.S. Steel Corp., Worcester, in January of 1972.

1936

ELWYN A. MURDOCK has retired as owner of Murdock Construction Co., New Haven, Conn. . . . JOHN A. PORTER has been named a machinery sales representative for the Machinery Division of Joseph T. Ryerson & Son, Inc. He will represent the division throughout the New England states, with the exception of Connecticut.

1937

ROLLAND W. McMURPHY has been named assistant construction division engineer of turnpikes for the New Hampshire State Highway Department. He had been district construction engineer since 1958.

1938

FRED B. BANAN is a consulting systems specialist for General Electric Co., Bethesda, Md. . . . J. RANDOLPH BUCK has recently been named manager, Reservoir Engineering Dept., Michigan Consolidated Gas Co., Detroit. . . . ROBERT B. KEITH, a former industrial engineer for U.S. Steel Corp., Pittsburgh, Pa., has retired.

1939

ELMER E. NUTTING is with Smith & Wesson, division of Bangor Printer, Springfield, Mass.

1940

PROF. LAWRENCE C. NEALE, director of the Alden Research Laboratories, has been made a Fellow of the American Society of Mechanical Engineers. Prof. Neale is widely known for his work in modeling of civil-engineering-type hydraulic systems ranging from fluid machinery through calibration of flow meters to large-scale water transport systems. He has been instrumental in keeping Alden Laboratory in the forefront of those installations conducting research in experimental hydraulics. . . . DR. MICHAEL WALES currently serves as a chemist for Shell Development Co., Houston, Texas. . . . David B. Zipser is general manager of the Wilmington Coil Division of Singer Co., Wilmington, N.C.

1941

EARLE F. WEBSTER is a technical superintendent for Unilok, the Belting Division of Georgia Duck and Cordage Mill, Atlanta, Ga.

1942

E. CURTIS AMBLER has been appointed manager of corporate product research for The Stanley Works, New Britain, Conn. He has been project manager, corporate product development department, since 1970. In 1967 he joined Stanley as manager of research and product engineering for the Power Tools Division. . . . ALLAN G. ANDERSON is a project manager at Bell Aerospace Co. (Division of Textron), New Orleans, La. . . . RALPH A. FRASER is a staff engineer for Amoco Production Co., New Orleans, La. . . . RALPH D. WHITMORE, JR., chief of design engineering with the Hollywood Film Equipment Co., has been elected a Fellow of the Society of Motion Picture and Television Engineers. The current issue of the Society's Journal features a special section on recent principal developments in film-handling equipment. Much of the equipment illustrated was credited to the Hollywood Film Equipment Co.

1945

JOHN P. HYDE has been appointed as vice president and general manager of the Soda Products Division, at Diamond Shamrock Chemical Company, Cleveland, Ohio. Previously he served as general manager of the division. He joined the company in 1951 as a staff process engineer, moving up to manager of operations, Soda-Chrome Products, by 1963. He was named general manager in 1970.

1946

JOHN C. METZGER, JR., has been appointed assistant general manager of the du Pont Company's Polymer Intermediates Department, Wilmington, Del. He has been director of the Fluorocarbons Division of the Plastics Department since January. Previously, when du Pont undertook the Savannah River Project, he was assigned as manufacturing supervisor at the heavy-water production facilities at the Dana plant in Newport, Ind. Since joining the company in 1946, he has also been associated with the Organic Chemicals Department, Development Department, Building Products Division, and Poromeric Products Division of the Fabrics and Finishes Department. . . . RICHARD F. PROPST holds the position of manager-product development and marketing, at Maydwell & Hartzell, Inc., San Francisco, Calif. . . . DELBERT E. WALTON is currently a self-employed sales representative in London, England.

1948

BRUCE NAGLER has been appointed as divisional superintendent of the Water Department in Needham, Mass. Previously he was employed by Metcalf & Eddy. . . . R. J. VENTRES has been named a group vice president of the Chemical Division of Borden, Inc., Leominster, Mass. He will be responsible for the division's thermoplastics, petrochemicals, and organic chemicals operations.

1949

FRED BESSELIEVRE is a design engineer with North American Rockwell, Los Angeles, Calif. . . . RICHARD J. COUGHLIN was recently appointed director of stores and services in Boston Edison Company's newly formed Procurement Service and Commercial Organization. He started his career with the Company in 1949. In 1961 he became the Laboratory's chief, and just prior to his latest promotion, he was assistant superintendent of engineering. . . . ROBERT E. MILLER has been named general superintendent of operations for the Connecticut Light and Power Co. Most recently he was superintendent of transmission and distribution at Berlin. Prior to that he was division superintendent at Waterbury and at CL & P's Northern division. . . . HERBERT M. PETTEE has been appointed to the post of chief engineer at Fowler Products Company (soft drink machinery suppliers) in Athens, Ga. He will be concerned with the engineering and manufacturing of a high speed decapping machine for the removal of aluminum screw caps from the returnable thread finish soft drink bottles. . . . DONALD V. SHATTUCK is now division general manager for Ingersoll-Rand Co., Woodcliff Lake, N.J. . . . WILLIAM G. SLOANE has been appointed as associate campaign chairman for the 1973 United Way Appeal in Kingston, N.Y. He is vice president of manufacturing for Rotron, Inc. . . . NORMAN F. TAYLOR is vice president of TADCO Construction Co., Inc., Jacksonville, Fla. . . . STEPHEN J. UCICH was coordinator of the Democratic Town Committee which supported the candidacies of McGovern and Shriver in the Wethersfield, Conn., area. He is a mathematics teacher at Hartford Public High School and a former member of the Wethersfield School Building Committee.

1950

LT. COL. AHARON AHARONIAN (USAF) currently serves as deputy chief, Systems Definition Directorate, deputy for reentry systems, at Los Angeles Air Force Station. . . . The New England Telephone and Telegraph Co., Boston, employs STUART G. LEONARD, JR., as a technical services engineer. . . . HAMMOND ROBERTSON, JR., has been named general manager of Mechanical Electrical Systems, Inc., Glens Falls, N.Y. . . . PHILIP A. WILD is now assistant manager of marketing at Stone & Webster Engineering Corp., Boston.

1951

HUGH C. LOVELL is assistant purchasing agent at E. I. du Pont de Nemours & Co., Wilmington, Del. . . . DEWEY R. LUND is assistant pump products manager at Duriron Co., Inc., Dayton, Ohio.

1952

ELLIOTT W. LEWIS has been elected to the Board of Directors of Stellar Industries, Inc., Newport Beach, Calif. He is president of Stellar Housewares Division.

1953

THEODORE C. FRITZ is now director of product development in the corporate research and development division of the Armstrong Rubber Co., New Haven, Conn. Previously he was employed by The Goodyear Tire & Rubber Co. and Kelly-Springfield Co. . . . MARSHALL J. KIDDER is a research chemist for Philips Laboratories, Briarcliff Manor, N.Y. . . . HERBERT P. NARBESHUBER is general manager of Bauer Gearmotors, Ltd., and is presently located in Oakville, Ontario, Canada.

1954

OTTO A. WAHLRAB was recently named chairman of the Massachusetts Republican State Committee. He is vice president of the John P. Slade and Son Insurance Agency, Inc., Fall River.

1955

CHARLES F. McDONOUGH has been appointed chairman of the Merchant's Department of the 1973 United Fund in the Somerset Valley region of New Jersey. He is currently manager of sales development at American Cyanamid Co. in Bound Brook. . . . ROBERT J. SCHULTZ, professor of civil engineering, has been named outstanding teacher in the School of Engineering at Oregon State University for 1972. In 1966 he was one of 47 OSU professors to receive $1,000 merit awards for teaching excellence. Schultz, who is considered a national authority in surveying and photogrammetry, has been chairman for a National Surveying Teachers Conference, American Society for Engineering Education.

1956

ROBERT S. ALLEN is a partner in Allen-Herzol Associates, Framingham, Mass.

Chairs

Aren't Always to Sit In

. . . but we have some of those, too!

The Tech Chair

carefully made from selected hardwoods, with the WPI seal applied by hand.

Send your order, and make checks payable to, WPI Bookstore, Daniels Hall, Worcester, Mass. 01609. Massachusetts residents must add 3% sales tax.

Prices are F.O.B. Gardner, Mass. Chairs are shipped express collect.

NOTE:
By March 1st, 1973, the WPI side chair will no longer be available, as the manufacturer is discontinuing it. If you have been thinking of getting one or more (they make fine dining room chairs), act now! This is really your last chance.

WPI Side Chair	$29.00 (No. 341-214)
WPI Arm Chair (black arms)	$45.00 (No. 342-214)
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Custom designed, hand crafted and hand screened, this beautiful wall clock has a battery-operated movement (takes one size D battery). Size is 20 inches high, 11 inches wide, and 2¼ inches deep. $37.95 delivered anywhere within the continental United States.

Send your order, and make checks payable to, WPI Bookstore, Daniels Hall, Worcester, Mass. 01609. Massachusetts residents must add 3% sales tax.

How to call a stereo buff's bluff.

A buff will probably tell you you've got to drop a bundle to get a really great stereo system.

Nonsense.

Stereo is all in the ear. It's how it sounds, not how it costs, that makes a stereo system great.

So next time some buff hands you that old line call his bluff. See if he can figure out how much you paid for your Sylvania matched component stereo system. Just by listening.

Pick your favorite record. Put it on the BSR micro-mini turntable. (If tape's your thing, slip one into the 8-track cartridge playback.)

Then balance the bass and treble on the FM stereo FM/AM tuner and amplifier. And let him have it.

Make sure he digs those round low notes from the two six-inch woofers. And those high sweet ones from the two three-inch tweeters. They're all air-suspension speakers, so they sound as good as standard speakers two sizes larger.

Your buff won't have a chance. He'll stand there, surrounded by sound, completely bluffed. Trying like crazy to figure out how much you laid out for a stereo that sounds that great.

But don't tell him.

After all, you just want to call his bluff. Not destroy his ego.

GTE SYLVANIA

1957

ALLAN E. CARLSON is now assistant manager, thin film devices, Western Electric Co., North Andover, Mass. . . . ROBERT P. ENGVALL holds the position of superintendent, production services, at Astra Pharmaceutical, Worcester. . . . EDWARD L. GALLINI is a project engineer at Acushnet Co., Golf Division, Acushnet, Mass. . . . HARRY DER HAROOTUNIAN serves as manager-director of Food Service System at Norton Co., Worcester. . . . LEONARD L. KRASNOW is a self-employed consultant in Worcester. . . . DR. FREDERICK P. MERTENS, a physical chemist, has been transferred from Texaco's Beacon (N.Y) Research Laboratories to Port Arthur Research Laboratories in Texas. He joined Texaco in 1964 and has held a succession of assignments in fundamental, catalysis, and surface chemistry research. At Port Arthur he will be engaged in corrosion and metallurgical research as a project chemist. . . . THEODORE F. ROE is an associate electrical engineer at Cornell Aeronautical Laboratory, Inc., Buffalo, N.Y. . . . WILLIAM C. ROGLER serves as an inventory control and planning manager at Monsanto Co., Creve Coeur, Mo.

1958

Army Reserve CAPT. ANDREW A. SZYPULA recently completed the first phase of the associate logistics executive development course for reserve components at the Army Logistics Management Center, Ft. Lee, Va. He is employed as an assistant technical manager by Bethlehem Steel Corp., Marine Division, Sparrows Point, Md. . . . PETER J. OTTOWITZ is president of Glamour Care, Inc., Hudson, Mass.

1959

THOMAS J. DOWNS has been promoted to college employment supervisor by Southern New England Telephone, New Haven, Conn. He joined the company in 1959 as an assistant engineer and was construction supervisor in Waterbury at the time of his recent promotion. . . . ROGER E. MILLER resigned from his position with Radiation Incorporated last year and went to Brazil where he did independent missionary work. Back in the U.S. he is now preparing to enter a seminary to become an Episcopal priest. . . . LEE D. SMITH, JR., is assistant to the production manager at du Pont, Wilmington, Del. . . . MAJ. ROBERT D. SMITH currently serves as a staff development engineer at the U.S. Air Force Development Center in Rome, N.Y. . . . JOHN E. WOLFE has joined Adams Russell Co., Inc., Waltham, Mass., as business manager.

1960

Married: JOHN W. BIDDLE and Miss Susan M. Jones on August 19, 1972 in Worcester. Mrs. Biddle was a personnel assistant at Worcester County National Bank. Her husband is a superintendent in the engineering and construction services division of Norton Co.

LAWRENCE C. BERGER serves as a research engineer at Mechanics Research Institute, McLean, Va. . . . DR. ROBERT A. CONDRATE, associate professor of spectroscopy at the New York State College of Ceramics, Alfred University, Alfred, N.Y., was invited to present a technical paper in his field at the 3rd International Conference on Raman Spectroscopy Sept. 8-13 in Reims, France. His paper presented the results of spectroscopic research on chemical compounds known as zirconates. His trip was partially underwritten by a National Science Foundation grant, and he served as the NSF's official observer at the Reims conference. Currently he is on leave of absence from Alfred to the Los Alamos National Laboratory in New Mexico. . . . RICHARD A. KISCHELL, a senior engineer at Southern New England Telephone Co., is serving as a loaned executive in the United Way's campaign in New Haven, Conn. . . . KENNETH L. MATSON has received his MBA from Rider College, Lawrenceville, N.J. He is district superintendent of the Hudson Gas District, Public Service Electric & Gas Co. of New Jersey. . . . EDWARD J. SAPPET is manager, photofabrication, at Radiation, Melbourne, Fla.

1961

STEPHEN B. BRODY works as a process engineer for Southeastern-Kusan, Greenville, S.C. . . . DR. HAROLD A. CHRISTOPHER has been promoted to liaison scientist at the Research and Development Center, General Electric Company, Schenectady, N.Y. He will be responsible for a two-way flow of information between G.E.'s components and materials group and the Center. Previously he was the principal investigator and contract program manager of several government-sponsored R&D battery programs.

1962

ANTHONY R. BIANCANIELLO recently received his MBA from Harvard. . . . DR. K. H. COTTER is a member of the C-5 Review Team for the USAF, Wright-Patterson AFB, Ohio. . . . DR. MICHAEL E. GORDON is a scientist at Polaroid, Cambridge, Mass. . . . DAVID LYONS has been presented the Kenneth B. Allen Award by the New York Water Pollution Control Association. His prize-winning technical paper was entitled: "The Methodology For Solving A Food Processing Plant's Wastewater Treatment Problems". He is employed by the USEPA as Chief of the Wood and Other Products Section—Effluent Guidelines and Standards Development.

1963

ANTHONY E. ALLEGREZZA, JR., has received his Doctorate in Chemical Engineering from the University of Massachusetts. He is now associated with the research department of the University of Wisconsin at Madison. . . . JOSEPH V. BUCCIAGLIA has been named superintendant of chemical production for the Uniroyal Chemical plant, Naugatuck, Conn. Previously he was general foreman of the chemical facilities which manufacture chemicals for the rubber and plastic industries and chemicals for agriculture. . . . TIMOTHY M. SHEA is a project planner at Westinghouse Electric, New York City. . . . MARVIN F. WOODILLA is a high school physics teacher in Laconia, N.H.

1964

Married: GERALD E. TAMMI and Miss Patricia Eve Assad in Worcester on July 23, 1972. Mrs. Tammi, a teacher, is doing graduate work at San Jose State College in California. Her husband is manager of automotive production engineering at Fairchild Semiconductor Co., Mountain View, Calif.

PETER BAKER is chief of engineering, AMPAC, Bangkok, Thailand. . . . WILLIAM C. KRANS is a senior programmer at American Optical, Southbridge, Mass.

1965

Married: JAMES A. KEITH to Miss Nancy J. Morgan in Georgetown, Maine on August 12, 1972. The bride is a registered dietitian. Her husband is a senior design engineer with Sanders Associates, Nashua, N.H. . . . JOHN J. VYTAL and Miss Linda H. Vytal last summer in Cambridge, Massachusetts. Mrs. Vytal is a Bridgewater State College graduate.

ROBERT H. CAHILL has received his master's degree from the Wharton School of Finance & Commerce, University of Pennsylvania. Previously he served in the Seabees as a company commander in Vietnam and later as the aide to a Rear Admiral. . . . PETER D. CHRISTENSEN is a science and math teacher at Lake Region High School, Bridgton, Me. . . . DAVID S. CLAYTON is an investment banker with Piper, Jaffray & Hopwood, Minneapolis, Minn. . . . JOHN T. HART is a product support engineer for Hewlett Packard, Waltham, Mass. . . . JOHN F. HENDRICKSON presently holds the post of department chief at Western Electric Co., Greensboro, N.C. . . . JOHN P. JACOBSON has been employed as an assistant marine scientist at Virginia Institute of Marine Science, Gloucester Point, Va. He recently received his MS in Ocean Engineering from the University of Massachusetts. . . . RONALD R. SCHULTZ is a software engineer for Texas Instruments, Inc., Houston, Tex. . . . EUGENE G. SWEENEY, JR., is now area manager for the Dow Industrial Service Division of the Dow Chemical Co., Richmond, Va. . . . RUSSELL B. TRASK is currently an electronics engineer at Sperry Gyroscope Co., Great Neck, L.I., N.Y.

1966

CAPT. HOWARD J. BRALEY has been graduated from the Air University's Squadron Officer School at Maxwell AFB, Alabama. He is presently assigned to Patrick AFB, Fla., as a special development engineer. . . . WILLIAM V. COLLENTRO is a lead engineer/site chemistry and shielding at GE's Knolls Atomic Power Lab., Windsor, Conn. . . . CARL E. HELLSTROM is a

senior planner, Planning and Community Development, for the City of Worcester. . . . LAWRENCE E. PIHL has received his MBA from Northeastern University, Boston. He is employed by Raytheon in Bedford, Mass. . . . STUART R. ROSELLE is a mechanical engineer (Projects) for the South Carolina Public Service Authority. . . . THOMAS SHEPELRICH is a project coordinator at J. A. Jones Construction Co., Tampa, Fla. . . . PETER K. SOMMER has received his Juris Doctor from American University, Washington, D.C. He is a patent attorney with Sommer & Weber, Buffalo, N.Y. . . . ROBERT C. ZAHNKE is technical supervisor at Allied Chemical Corp., Morristown, N.J.

1967

Married: RICHARD A. ORMSBEE to Miss Irene R. Thomas on August 12 in Floral Park, N.Y. Mrs. Ormsbee is an executive secretary at Best Foods where her husband is a research chemist.

ROGER V. BARTHOLOMEW is a novice in the Society of Jesus, New Orleans, La., Province. . . . STEPHEN B. COTTER serves as a pilot in the Maine Air National Guard. . . . PHILIPPE P. COUSTEAU is director, chief photographer and diver for "The Undersea World of Jacques Yves Cousteau". (His father is the famed oceanographer and co-inventor of the aqualung.) In 1966, after training in cinematography, Philippe became the director of his father's Paris-based film production corporation, Les Requins Associes, of which he is today vice president. . . . CARMEN DELLA VECCHIA is a sales representative for Procter and Gamble Distributing Co., Jacksonville, Fla. . . . RICHARD F. DEFALCO is currently an engineering consultant and president of the National Environmental Planning and Control Corp. (NEPCC) of Worcester. . . . CHARLES N. DIMAN is a project engineer for W. R. Grace & Co., Burlington, Mass. . . . JOHN B. FELDMAN received his MS degree in Environmental Health from Harvard last June. . . . JOSEPH F. GOULART who built Indra, the fiberglass-bodied, mid-engine sports car described in the October 1971 *Journal,* has moved to Michigan where he is a project engineer, environmental systems, at the General Motors Proving Ground. . . . RICHARD C. HOLLER who is presently completing his MS in Computer Science at WPI, has employment as a systems analyst at Hooker Chemical Corp., Niagara Falls, N.Y. . . . BRADFORD A. JOHNSON is a recovery systems engineer at Goodyear Aerospace Corp., Akron, Ohio. . . . CAPT. PETER W. MULLIN has received the Air Force Commendation Medal at Los Angeles Air Force Station, Calif. He was decorated for meritorious service as a project engineer while assigned to the Special Projects Program Office at Hanscom Field, Mass. . . . CALVIN E. PHILLIPS is with the Nuclear Energy Division of General Electric at San Jose, Calif. . . . HOWARD H. SHORE recently received his Juris Doctor from the University of San Diego (Calif.) Law School. He is spending

KEEPING UP WITH THE PATELS

If you took a wild guess about the most common last name among WPI alumni, you'd probably say Smith or Jones. Well, Smith it is, with 92 alumni Smiths.

But restrict the time period to the last ten years, including current students, and the odds are you'd never guess the most common name. It's Patel. It seems that since 1966 WPI has graduated 46 Patels, and there are 18 currently studying at the Institute.

The Patels all come from west-central India, and many recent students may have wondered about this parade, how they found their way to WPI, halfway around the world.

No one really knows for sure, but Pratim Patel, '72, thinks he might have the answer.

"It probably has something to do with what happened generations ago in India," he says. "Originally all the Patels were part of a caste that consisted mainly of small farmers and businessmen. They lived in or near small villages. The head of each village was called a Mukhi, or Patel.

"Gradually they prospered and many left India to take over larger businesses in England, Singapore, Hong Kong, and the African countries of Kenya and Uganda. Uganda," he explained, "is where many of the foreign businessmen, including Patels, are being sent out of the country."

He went on to say that as the Patels improved their lot in life they saw to it that they did the best they could for their children. Naturally that included higher education for the sons.

But why did so many come to WPI?

"The vast majority of Patels are graduate students," he explained. "But even at graduate schools on other campuses, I'd almost guarantee that about 40 percent of the Indian students are named Patel," he said.

Are the Patels all related?

He laughed. "No," he replied. "I'm living with three other Patels on West St. right now and none of us are related. Patel is a very common name in the Indian state of Gujarat. Practically everyone there is called Patel."

How had he personally heard of WPI?

"My father comes to this country almost every year and when he's here he usually visits an American friend in Leominster," he said. "That is how we heard of WPI and why I transferred from St. Xavier's in Bombay a couple of years ago.

"That Leominster family treats me almost like their own son," he continued. "I can visit them any time I wish and they make me feel welcome."

Do he and the other Patels go back to India for a visit while they are studying in this country?

"No," he replied. "It costs our families about $4,500 a year to send each one of us here, so while we're at WPI we stay."

He said that the average yearly income of many families he knew was about 15,000 rupees. "It costs 35,000 rupees to send a son to WPI," he said, "so most of the Indian students have to be quite well off financially."

Pratim Patel is a very articulate young man who since graduating in June has taken up graduate study in the chemical engineering department at WPI. Currently he is working on a hydrogenation of sugar project.

"I would like to be able to get a job in this country, just for the experience, before returning to India. But at present U.S. laws forbid it," he says.

Even though this door to opportunity is presently closed to him, Patel returns, not too unhappily, to his sugar project. There will be a time, later, for experience.

Meanwhile, the ever-growing parade of Patels keeps knocking at the door of opportunity that is open to all of them—a WPI education.

the 1972-73 academic year at London School of Economics and Political Science, working toward his Master of Laws in International Law.

1968

Married: FRANCIS L. ADDESSIO to Miss Barbara Anne Kobelka on July 22 in Little Falls, N.J. The bride attended Bethany (W. Va.) College. Her husband is currently a candidate for his PhD in jet propulsion at Purdue University, Lafayette, Indiana. . . . JOHN J. KOKOSZKA to Miss Ingeborg Elaine Karen Kobashigawa on July 1, 1972 in Aberdeen, Maryland. The groom is an area engineer (engineering division) for Eastman Kodak Company, Kodak Park, Rochester, N.Y. . . . ROBERT T. PLEINES and Miss Susan A. Morrissey on August 12, 1972 in Auburn, Massachusetts. Mrs. Pleines is a teacher. Her husband is with Monsanto Co., Springfield. . . . PAUL W. REMIJAN and Miss Paulette E. Lucier in Fiskdale, Massachusetts on September 2, 1972. The bride is a graduate of St. Vincent Hospital School of Nursing, Worcester. The groom, who has received a master's degree in optical science from the University of Arizona in Tucson, is currently attending the University of Rochester in New York.

Born: To Mr. and Mrs. RONALD E. JODOIN a daughter, Christine Marie, on March 28, 1972. Ron is now working for his PhD in Physics at the University of Rochester.

WARREN BENTLEY serves on the Information Systems Staff at Western Electric, Cockeysville, Md. . . . JOHN M. BURNS is a law student at the University of San Diego, Calif. He is also associate engineer at San Diego Gas & Electric Co. . . . DAVID A. FARR is a civil engineer at Hamilton Engineering Associates, Nashua, N.H. . . . GEORGE F. GAMACHE has been appointed project engineer in the construction department of Star Markets. . . . DAVID L. GRADWELL is currently an industry development analyst for IBM in Kansas City. . . . RICHARD HAMPSON is now a senior associate engineer at IBM Corp., Endicott, N.Y. . . . PHILLIP LaROE, who recently received his master's in physics at Rice University, is a science teacher at Yutan (Neb.) High School. . . . LOUIS MANONI has employment with the Defense Communications Agency, The Pentagon, Washington, D.C. He is a mathematician. . . . DAVID MOORE is a teacher at Nashoba Regional High School, Bolton, Mass. . . . SUNG I. PAIK is a mechanical design engineer at Pratt & Whitney Aircraft, East Hartford, Conn. . . . WILLIAM J. RASKU, who was recently married to Miss Mary Jane Lucas, is teaching chemistry at Wachusett Regional High School, Holden, Mass. He has received his Master of Education degree from Worcester State College and a National Science Foundation grant for the In-Service Institute for Secondary School teachers held at WPI in September. . . . FREDERICK F. REED is a development engineer at GTE Sylvania, Inc., CATV Operation, Seneca Falls, N.Y. . . . JEFFREY E. SHAW has been named director of graduate and career plans at WPI. After graduating from WPI, he received a master's degree in metallurgy and materials science from Lehigh University. For four years he has been a development engineer for Western Electric Co. Shaw succeeds William F. Trask, who was recently named associate dean of student affairs. . . . ROBERT SMITH and wife, Alice, set sail from Shelburne Bay in Vermont on September 1 "to see the world's people and places." They are crewing their own Hinckley 36. Bob, who is on leave from his job at IBM, says they may purchase a larger boat when they reach the Caribbean. . . . E. WAYNE TURNBLOM has received his PhD in organic chemistry from Columbia University. He joined the faculty of Princeton University in September as an instructor in organic chemistry. Recently he traveled to Heidelberg where he conducted research and to Brussels where he delivered a talk as the recipient of a Louis P. Hammett Fellowship.

1969

Married: RONALD L. JONES to Miss Wanda Lee Barkhurst in Fayetteville, North Carolina on August 19, 1972. The bridegroom is a candidate for a master's degree in business administration at the University of Hartford. . . . RON L. WENDELKEN and Miss Jane Lester on August 4, in Buxton,

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STATEMENT OF OWNERSHIP, MANAGEMENT AND CIRCULATION

(Act of October 23, 1962: Section 4369, Title 39, United States Code)

1. Date of filing. September 29, 1972. 2. Title of publication. WPI JOURNAL. 3. Frequency of issue. Five times per year (October, December, February, April and August). 4. Location of known office of publication (Street, city, county, state, zip code). Institute Road, Worcester, Worcester, Massachusetts 01609. 5. Location of the headquarters or general business offices of the publishers (Not printers). Institute Road, Worcester, Massachusetts 01609. 6. Names and addresses of publisher, editor, and managing editor. Publisher (Name and address). Worcester Polytechnic Institute, Worcester, Massachusetts 01609. Editor (Name and address). H. Russell Kay, Worcester Polytechnic Institute, Worcester, Mass. 01609. Managing Editor (Name and address). None. 7. Owner (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding 1 percent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a partnership or other unincorporated firm, its name and address, as well as that of each individual must be given.) Worcester Polytechnic Institute, Worcester, Massachusetts 01609. 8. Known bondholders, mortgagees, and other security holders owning or holding 1 percent or more of total amount of bonds, mortgages or other securities (If there are none, so state). None. 9. For completion by nonprofit organizations authorized to mail at special rates (Section 132.122, Postal Manual). The purpose, function, and nonprofit status of this organization and the exempt status for Federal income tax purposes have not changed during preceding 12 months. (If changed, publisher must submit explanation of change with this statement.) 10. Extent and nature of circulation.

	Average No. Copies Each Issue during Preceding 12 Months	Actual Number of Copies of Single Issue Published Nearest to Filing Date
A. Total no. copies printed (Net press run).	14,049	15,022
B. Paid circulation.		
1. Sales through dealers and carriers, street vendors and counter sales.	0	0
2. Mail subscriptions.	1	0
C. Total paid circulation.	1	0
D. Free distribution by mail, carrier or other means.		
1. Samples, complimentary, and other free copies.	12,787	13,912
2. Copies distributed to news agents, but not sold.	0	0
E. Total distribution (Sum of C and D).	12,788	13,912
F. Office use, left-over, unaccounted, spoiled after printing.	2	1,110
G. Total (Sum of E & F — should equal net press run shown in A).	14,049	15,022

I certify that the statements made by me above are correct and complete.

H. Russell Kay, Editor

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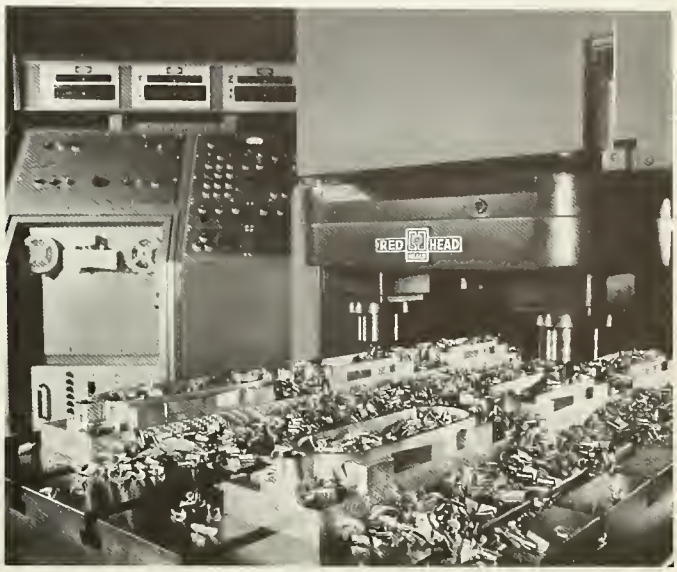

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Maine. The bride is a graduate of Becker Junior College, Worcester. Her husband is associated with his father as a painting contractor in the Saco, Me., area. . . . JOHN E. WILSON, JR., to Miss Lynda Morin on August 13, 1972 in Easthampton, Massachusetts. Mrs. Wilson attended Holyoke Community College.

NORMAND L. BACHAND has enrolled at Wayne State University, Detroit, Mich. . . . J. MICHAEL BOYD is a sales engineer at James K. Boyd Co., East Providence, R.I. . . . BRIAN D. CHACE is with Sylvania Electronic Systems, Needham, Mass. . . . JOSEPH F. FITZGERALD, JR., has employment as a marine engineer at General Dynamics, Ouincy, Mass. . . . JOHN S. GRANT is now employed as a mechanical purchasing agent for Digital Equipment Corporation, Maynard, Mass. . . . JAMES T. HEINRICH serves as regional sales manager for Elliot Company, Chicago, Ill. . . . DAVID E. KILPATRICK is with the U.S. Submarine Force, New London, Conn. . . . JAMES P. MILLS now has employment with the Chassis Division of the Ford Motor Co., Sterling Heights, Mich. This year he received his MS in mechanical engineering from RPI, Troy, N.Y. . . . ALVIN B. PAULY is a process engineer for Brown Co., Berlin, N.H. . . . FREDERICK G. SPRETER holds the position of associate engineer at Bailey Meter Co., Charlotte, N.C. . . . ROBERT L. STESSEL is self-employed at River Rat Marine Radio, Danvers, Mass. . . . DAVID A. ZLOTEK is a senior design engineer at GTE Sylvania, Needham Heights, Mass.

1970

Married: JAMES F. BAGAGLIO and Miss Janet Lee Ceddia on August 20, 1972 in Milford, Massachusetts. The groom is working toward his master's degree in medical chemistry at the University of Pittsburgh. . . . JAMES F. CRONIN to Miss Kathy Sherlyn Ann Landry on August 26 in Lafayette, La. The bride is a graduate of the University of Southwestern Louisiana. The bridegroom is a field representative for Babcock & Wilcox Power Generation Division, Richardson, Texas. . . . FRANK B. POPE to Miss Pauline M. Willus last summer in Medford, Massachusetts. ROLAND BATSON, '71, was an usher. The bride is a teacher. Her husband is with Stein Associates, Waltham.

GREGORY W. BACKSTROM has taken a leave of absence from Xerox to pursue an MBA at the University of Michigan at Ann Arbor. Prior to his leaving Xerox, he had been promoted to quality control engineer. . . . STEPHEN E. BERNACKI received his master of science degree from Harvard University last June. . . . STEPHEN R. CROSBY is a graduate student at the University of Connecticut, Storrs. . . . LAWRENCE B. COHEN serves as an intern in the chemistry department at North Shore Community College, Beverly, Mass. . . . DANIEL A. CZERNICKI is with the Naval Underwater Systems Center, Newport, R.I. . . . EDWARD P. FOSTER has been named manager of Tampella Systems with the industrial and marine division of The Babcock & Wilcox Company's power generation group in Barberton, Ohio. He will be responsible for developing the Tampella process (a patented chemical recovery process which recovers sodium and sulfur from recovery boiler smelt used in the pulp and paper industry) for sale in North America. Foster is presently working for his MBA at Kent State University, Kent, Ohio. . . . J. RANDALL HUBER is a junior engineer at Bay State Engineering Corp., Winchester, Mass. . . . ROBERT D. PLANTE was recently commissioned an Army second lieutenant upon graduation from the Artillery Officer Candidate School at Ft. Sill, Okla. . . . F. DAVID PLOSS III is currently working for Norton Co. in Worcester, and he is also rowing coach at WPI. Last summer he served as a rowing coach at the Olympic games in Munich, Germany. . . . PAUL C. WILSON is a

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graduate assistant at the University of New Hampshire where he is in the PhD program in theoretical and applied mechanics. . . . DAVID A. QUAGLINI, JR., is a structural design engineer at Combustion Engineering, Inc., Windsor, Conn. . . . J. F. WEISZ is a teaching assistant at the University of Kansas.

1971

Married: ROBERT A. CHILDS to Miss Lois Ann Baldwin on September 9, 1972 in Worcester. The groom is a controls engineer at Riley Stoker Corp. . . . LT. JAMES L. DeLARY to Miss Susan Rachel Harting on July 15, 1972 in Roslindale, Massachusetts. The bride graduated from Framingham State College in June. Her husband is serving with the armed forces in Germany where the couple will live for the next two years. . . . DOUGLAS C. FAY and Miss Pamela J. Elmer on July 22 in Holden, Massachusetts. The bridegroom is a computer operator at Hendries Refrigerated Storage, Southboro. . . . MICHAEL MURPHY and Miss Donna M. Janowski on September 3, 1972 in Worcester. Among the ushers were JAMES BAGAGLIO, '70 and JOHN GIORDANO, '71. Mrs. Murphy is a registered nurse at St. Vincent Hospital. Her husband is a data communications consultant for New England Telephone Co., Boston.

ANTHONY RUSCITO to Miss Patricia Murtha on July 28, 1972 in Fairfield, Conn. ROBERT MERRITT, '70, ushered. Mrs. Ruscito is a Becker graduate. . . . FRANCIS M. SCRICCO and Miss Pamela M. Strombom on August 26, 1972 in Worcester. The bride is a graduate of the University of Massachusetts. Her husband is a graduate student at Columbia University, New York City. . . . DANIEL P. SMITH and Miss Karen D. Chojnacki on August 26, 1972 in Worcester. Mrs. Smith is a student at Quinsigamond Community College. The groom is employed by Riley Stoker Corp. . . . BRUCE SODERMAN to Miss Cynthia Novey on Sept. 1 in Worcester. Mrs. Soderman is a graduate of Becker Junior College. . . . ROBERT J. TRACHIMOWICZ and Miss Patricia A. O'Neil on September 9, 1972 in Worcester. The bride is a staff nurse at Worcester City Hospital School of Nursing. The bridegroom is an electrical engineer for Ebasco Services of New York, working for Houston Lighting and Power, Houston, Texas.

PAUL B. ASH, who recently received his MAT from the University of Massachusetts, is currently a chemistry teacher at the Amherst (Mass.) Regional High School and Hillcrest Elementary School. . . . ASHOK K. BADJATNYA is self employed in India. . . . ROLAND R. BATSON has been named assistant general manager at Ace Traveler Co., Alfred, Me. In his new position he will be in charge of sales, engineering, manufacturing, and purchasing activities. . . . ALAN E. BEDARD is an associate engineer with New England Telephone and Telegraph Co., Fitchburg, Mass. . . . JOSEPH P. BELLINO is a pre-sales engineer for Riley Stoker Corp., Worcester. . . . PAUL H. COOPER, JR., has been appointed a civil engineer trainee in the U.S. Army Engineer Division, New England, at Waltham, Mass. He will receive assignments in planning, design, construction, hydrology, and related fields. . . . SCOTT DINEEN has joined the Trane Company's commercial air conditioning division sales office in New York City. . . . DAVID L. GREENHALGH, a second lieutenant in the Army, is presently stationed at Ft. Knox, Ky. . . . RICHARD V. GROUT is with United Engineers & Constructors, Boston, Mass. . . . STEEN HANNIBAL is head of the biomedical engineering department, Copenhagen County Hospital, Copenhagen, Denmark. . . . RUSSELL F. HARRIS teaches at Algonquin Regional High School, Northboro, Mass. . . . DR. JAMES A. KAUFMAN is currently a Post Doctoral Fellow in the Chemical Engineering Department at WPI. . . . JOSEPH E. LAPTEWICZ recently received his MS degree in chemical engineering from Cornell University, Ithaca, N.Y. He now is a process engineer for Pfizer, Inc., Groton, Conn. . . . JOHANNES LARSEN is employed at Alden Research Laboratories, Holden, Mass. . . . JAMES P. LAVALLEE, JR., has employment with Chicks Construction Co., Clinton, Mass. . . . JARL D. LINDEN is a consulting engineer at C. A. Paterson, Inc., Sarasota, Fla. . . . WILLIAM J. MULVEY serves as a design engineer for Sikorsky Aircraft, Stratford, Conn. . . . WILLIAM C. PALMER is working for his MBA at Duke University, Durham, N.C. . . . JOHN H. READ is an assistant structural engineer at B & M Corp., North Billerica, Mass. . . . DR. PATRICK V. ROMANO is an assistant professor at Westfield (Mass.) State College. . . . RICHARD P. SAN ANTONIO has been accepted at the Washington University School of Medicine, St. Louis, Mo. This year he receives his MS degree from MIT. . . . ALFRED B. SCARAMELLI, JR., has received his MS in civil engineering from the University of Massachusetts. The University has awarded him a research assistantship and he is currently working for his doctorate in environmental engineering. . . . WILLIAM A. SHERMAN is a draftsman for Cosentini Associates, Cambridge, Mass. . . . JAMES H. SNIDER is with Alden Research Laboratories. . . . JOHN F. SPERANDIO, JR., was one of several Peace Corps volunteers who was arrested in Uganda in September and later released. He had been teaching physics at Kiria College in Ginja and was traveling when he was arrested in the warring African country. . . . 2/LT. PETER B. WELLES is with the U.S. Army in Germany. . . . ROBERT D. WILLIAMS has been appointed to the position of district scout executive of the Watatic District, Nashua Valley Council, Boy Scouts of America. . . . FREDERICK WOZNIAK is with Stone & Webster Engineering, Boston.

1972

Married: PAUL W. ANDRUCKIEWICZ to Miss Carol M. Kingston on August 26, 1972 in Northfield, Vermont. The bride is an elementary school teacher in the Worcester school system. Her husband is a graduate student at MIT. . . . JAMES M. CISKOWSKI and Miss Alice B. Lefebvre on July 29, 1972 in Worcester. Mrs. Ciskowski is a school teacher. The bridegroom is doing graduate work at Duke University, Durham, N.C., where he is a teaching assistant in the Gross Chemical Laboratory. . . . DAVID S. CUMMINGS and Miss Bonnie Lee Herrmann on June 17, 1972 in West Boylston, Massachusetts. Mrs. Cummings is a dental assistant. . . . JOHN R. FERRARO to Miss Cynthia L. Woods on September 9, 1972 in Springfield, Massachusetts. The groom is with Northeast Utilities Service Co., in Berlin, Conn. . . . DANIEL GACCETTA, JR., to Miss Janet M. Eastman on August 19, 1972 in Bethel, Maine. Mrs. Gaccetta is a graduate of the University of Maine. Her husband is employed by Factory Insurance Association, Worcester. . . . MURRAY GLAZER and Miss Karen Joan McClutchy on July 30 in Falmouth, Massachusetts. Mrs. Glazer teaches in the Weymouth school system. The groom has employment with Universal Prestressed Concrete Co., Inc., Plympton. . . . DAVID T. HAYHURST to Miss Elizabeth J. Friend on August 5, 1972 in North Attleboro, Massachusetts. A Wheaton College graduate, Mrs. Hayhurst is a teacher in North Attleboro. Her husband is doing graduate work at MIT. . . . GEORGE KARAPETIAN

and M. Meline Khodjian on September 24, 1972 in Worcester. . . . RICHARD N. PANTON and Miss Deborah C. Turansky on August 26 in West Hartford, Connecticut. Mrs. Panton is a Becker graduate. Her husband is with du Pont in Richmond, Va.

. . . LT. JOHN D. POWERS to Miss Elizabeth C. Ulrich on September 23 in Berkeley Heights, New Jersey. Mrs. Powers attended Bethany College. Lt. Powers, who is with the Army Adjutant General Corps, is presently stationed at Furth, Germany. . . . JOHN E. SWANSON to Miss Kathleen M. Knight on September 2 in Concord, New Hampshire. JOHN DEMASE, '70, was an usher. The bride, a Becker graduate, works for the N. H. Technical Institute in Corcord. Her husband is in Officers Preparatory Academy in Alcoa, Tenn.

DWIGHT B. ALLEN serves as a junior aeronautical engineer for Itek, Lexington, Mass. . . . DONALD J. BLACHOWICZ is a chemical operator at Humphrey Chemical Co., North Haven, Conn. . . . FRANCIS B. COSTA is a graduate assistant at the University of Miami. . . . RICHARD L. COTTER is a research chemist at Waters Associates, Inc., Framingham, Mass. . . . ANDREW J. CUCCHIARA is doing graduate work at the University of Oklahoma Medical Center, Oklahoma City. . . . LINDA M. DUPONT has employment as a systems analyst at Wright Line, a Division of Barry Wright Corp., Worcester. . . . F. JEAN FRASER is at Bradford College, Institute of Urban Studies, Bradford, Mass. . . . THEODORE A. FREDERICKS is a service engineer for Riley Stoker Corp., Worcester. . . . DR. ALBERT A. HEANEY is an associate professor of electrical engineering at Andrews University, Berrien Springs, Mich. . . . WILLIAM J. KLEIN, JR., serves as a night shift supervisor at Boxmakers, Inc., Westfield, Mass. . . . RCA of Burlington, Mass., employs ANDREW G. MAYSHAR as an associate member of the technical staff. . . . BARRY M. MORAN is an educator at The Loomis Institute, Windsor, Conn. . . . FRED MULLIGAN is a purchasing agent for Herbert Engineering, Worcester. . . . EDWIN L. PACE has the position of manager—thermodynamic design engineering, at General Electric Co., Fitchburg, Mass. . . . BHOGILAL L. PATEL holds the post of product manager at Environmental Control System, Inc., Minneapolis, Minn. . . . RICHARD S. PODOLNY is employed as a chef at the Brewster Inn, Brewster, Mass. . . . DR. A. E. SAPEGA is a professor at Trinity College, Hartford, Conn. . . . DINESH V. SHAH works as a mechanical engineer for Matz Corporation, Holyoke, Mass. . . . ELLIOTT STRIZHAK is a staff engineer at MIT's Lincoln Labs. . . . JAMES W. TARPEY has joined the Electrical Engineering Department of Orange & Rockland Utility Co., Spring Valley, N.Y. . . . WILLIAM S. WAY is a technical representative at Kemper, Boston, Mass. . . . WILLIAM R. WHITWORTH is superintendent of industrial packaging at Maryland Plastics, Inc., Federalsburg, Md. . . . JOHN ZORABEDIAN, JR., is a manufacturing management trainee at General Electric Co., Pittsfield, Mass.

OOPS! As hard as we try, errors still creep in occasionally. We apologize for the errors which occurred in the report of the 1971-72 Annual Alumni Fund, and we want to sincerely recognize the thoughtfulness and generosity of the following contributors:

Charles Bonin '38	President's Club
William R. Grogan '46	Century Club
Kim Woodbury '44	Century Club
Otto Konigslow Co.	
William Schuermann '21	President's Club
B. Lee Tuttle '69	

feedback

To the Editor
My heartiest congratulations to you and to the Alumni Publications Committee on the new approach, and "new look" being developed in *The WPI Journal* – at least as evidenced by the August 1972 issue, which I have read from cover to cover (and re-read several parts). The editing of the material presented at the symposium held on the campus on May 2, 1972 was an outstanding job. The whole idea of a "theme issue" concept, meaningful to alumni and relating directly and currently to Tech, is not only sound but should lead to a more conscious reaction of alumni that their Alma Mater is a vibrant, living and significantly important institution in the educational world today. Keep up the fine work!

I like the WPI NEWSBRIEFS also as they are issued from time to time. The September issue was particularly newsworthy. The change in the Admissions Policy is certainly a move in the right direction provided the admissions staff can give it the manhours needed for effective application. It has always been my view that "College Board" grades were something the admission officer was wont to hide behind for lack of time or energy or desire to really find out what made the applicant "tick".

But I was appalled at the article "Parents Surveyed". I cannot accept the statement that 87 replies out of 591 inquiries was "a good response". The education of their son or daughter, at very substantial cost, is one of the two or three of the major events in a parent's lifetime. The expenditure alone is probably the second (next to a home) largest capital investment those parents will make. A questionnaire of this type should be addressed in a "personal" manner, either from the Dean of Admissions, or better yet from the President. I assume it was. What important questions were presented! That less than 15% of parents should have responded to the question of whether Tech was providing the right environment for their son or daughter – or how that educational environment might be improved is absolutely appalling. It vividly points up a very serious communications gap with the President's office. I cannot understand it.

GORDON C. WILLARD '24
North Chatham, Mass.

Public Relations Director Roger Perry, who also serves as executive secretary of the WPI Society of Families, replied to Mr. Willard explaining why this was considered a good response. Briefly, he noted that "the response to mail surveys, direct mail advertising and questionnaires rarely exceeds the percentage response of this particular survey and generally is less. Since the questionnaire in question was part of a mailing which included an issue of the Parents' Newsletter, many people considered that a reply was optional (which it was).

"The questionnaire, in our opinion, served the purpose for which it was sent in that it provided parents wishing to make comments or ask questions the opportunity to do so. Many returns resulted in letters or telephone calls back to parents to clarify particular situations.

"The questionnaire and the parents' newsletters serve to establish a communications link with parents who often call Mr. Perry's office when they are not sure who to contact. He is able to direct their inquiries to the right person on campus, or when confidence is requested, to obtain the needed information himself."

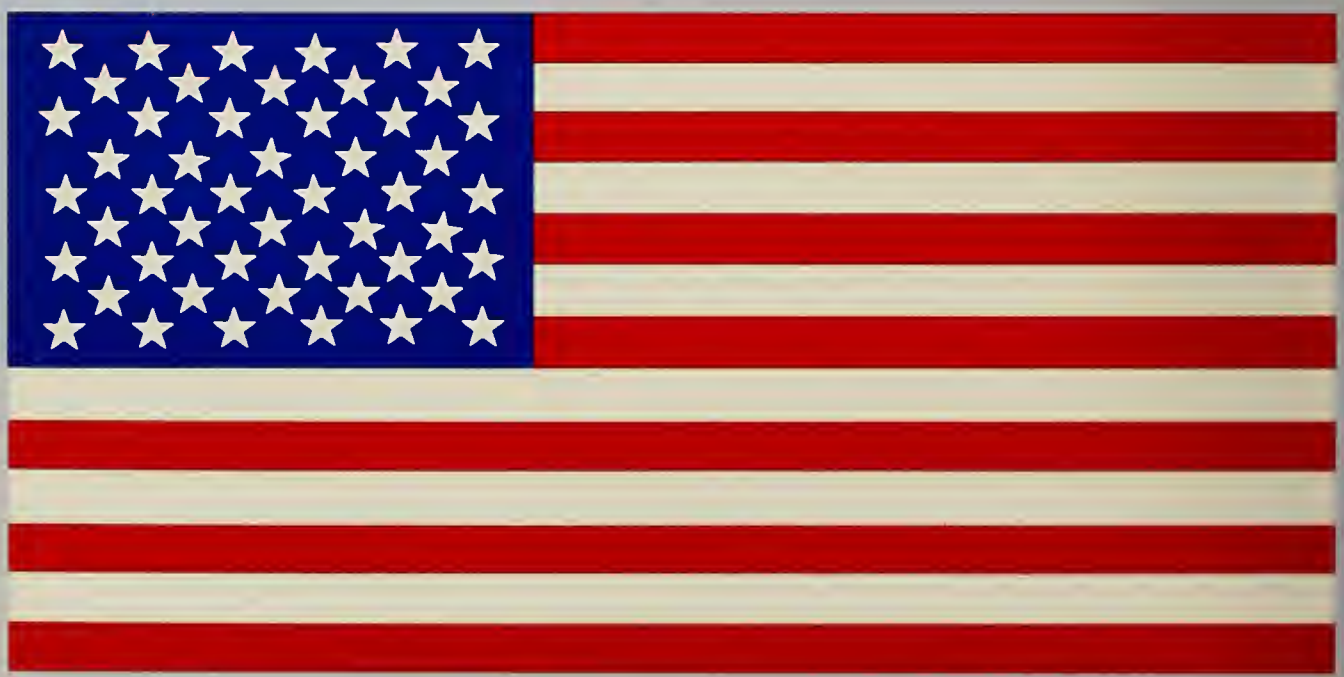
To the Editor
Over the years I have enjoyed receiving the *Journal* and generally found myself reading about members of my class and those classes that were close to me. Occasionally, there were articles of interest, however, I must admit that consistently over the years the *Journal* was of moderate interest.

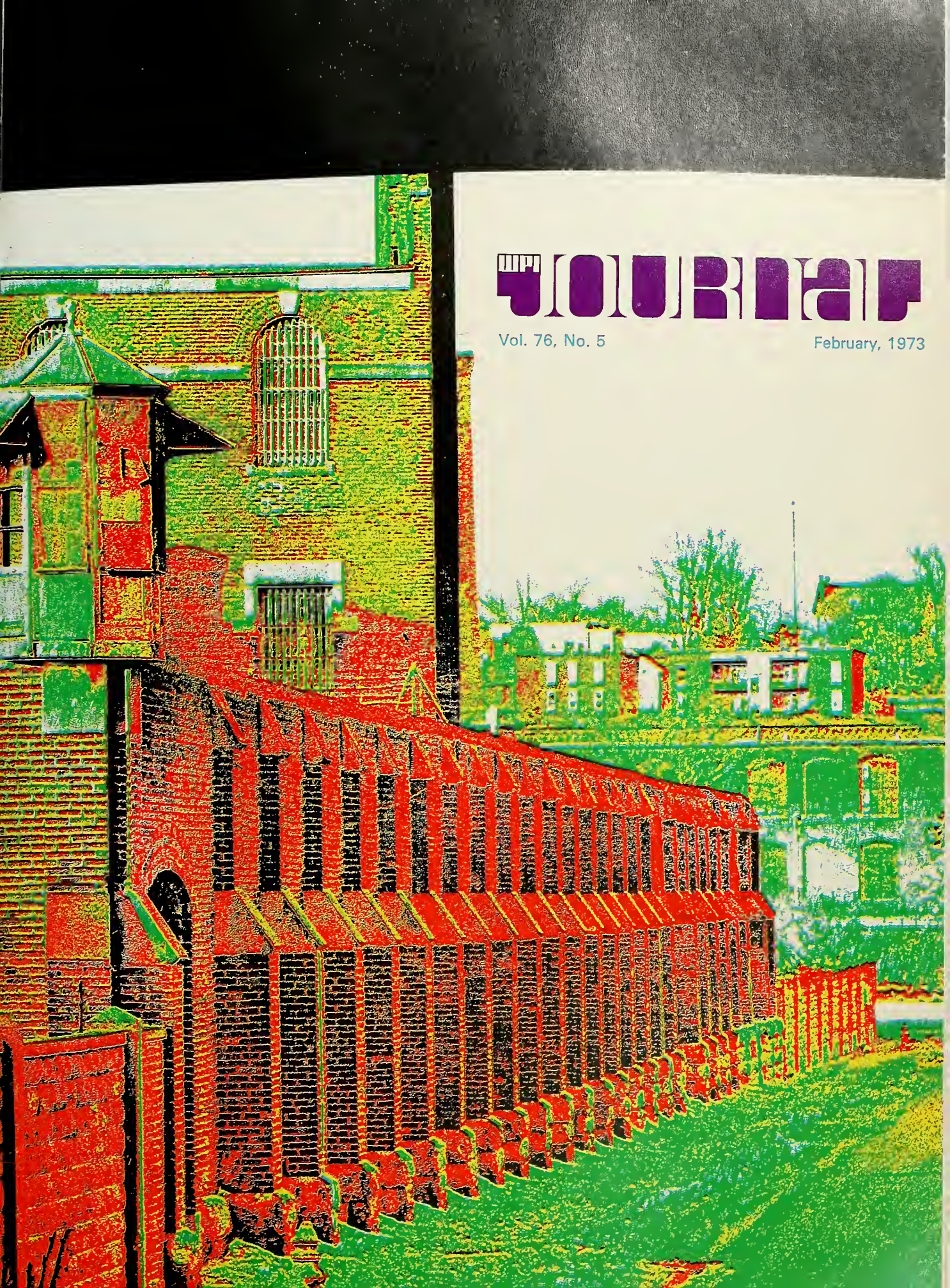
Walter B. Dennen's article was "right-on" and I want to compliment you and your staff with respect to the issue on genetic engineering. This *Journal* was read by me cover-to-cover. Keep up the good work.

HAROLD FLEIT '45
Stamford, Conn.

To the Editor:
It was very gratifying and encouraging to note in your article that the "Journal" will be distributed to undergraduates. I've always voiced the opinion that if better Alumni interest and participation is to be realized it's got to start during the undergraduate years. I've always felt that Tech has been remiss in this. This step is certainly in the right direction.

JOHN F. BRIERLY '50
Glenview, Illinois





WPI JOURNAL

Vol. 76, No. 5 February, 1973

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1 **Involving You and Us**—an editorial

2 **Seven Weeks at the Jail**—a WPI student teaches English at the oldest jail in the country.

12 **Bill and the Brother Machine**—a WPI student who has found himself 70 little brothers—and a lot of personal satisfaction.

20 **SKYLAB**—two WPI alumni and their very different kinds of work with the U.S. space program.

33 **The New Look**—a word from the editor about the revised *Journal* format.

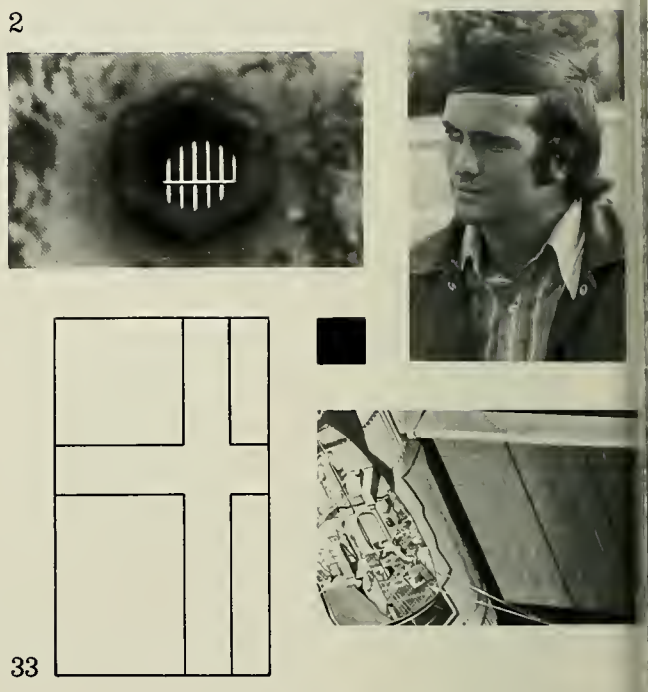
Departments

16 **Completed Careers**

18 **Your Class and Others**

32 **Feedback**

The Cover: This month's cover started out as a black-and-white photograph of the Worcester County Jail taken by the editor. From this original print he produced the four-color posterization. For a few words on the new *Journal* logotype, see page 33.



Editor: H. Russell Kay

Alumni Information Editor: Ruth A. Trask

Publications Committee: Walter B. Dennen, Jr., '51, Chairman; Richard DeChard, '56; Robert C. Gosling, '68; Enfried T. Larson, '22; Roger N. Perry, Jr., '45; Rev. Edward I. Swanson, '45

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WPI Alumni Association

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nvolving You and Us

re a young alumnus who is unhappy with your employ- and want to make a change. Or perhaps you've been out llege for twenty-five years and suddenly one day find self unemployed and with no real concept of any tion to turn. Or maybe you're looking to better yourself aking an employment change. Any one of these cases can ront an alumnus at some point in his career. We feel it is esponsibility of the Alumni Association and WPI to ide assistance to alumni who find themselves in one of sometimes traumatic situations. We feel you should be e of what is available to you.

A new effort of the Office of Graduate and Career Plans nerly the Placement Office) is rapidly taking shape. An l mailing to over 7,500 alumni in December has generated ater than expected number of inquiries regarding the new ram. In the first two weeks over 500 responses were ved. (Incidentally, it's not too late to respond.) The key ent of the service is a new publication titled "Opportuni- " It will be prepared monthly by the Office of Graduate Career Plans and it will contain job descriptions, including ion, requirements, salary, and other pertinent facts. her information on the various positions will be available n request. The first issue on February 1 contained oximately 125 listings of positions currently available and mailed to all who responded. The Office of Graduate and er Plans is conducting an active program to expand loyer inputs and the listing of available positions. As loyers become aware of the service, it is anticipated that increase will be dramatic. An additional twelve issues will vailable for a service charge of five dollars. We have every e that we will be able to satisfactorily assist alumni of WPI is way.

Help is needed though and you can provide it. The success he program will depend to a great extent on the listings ained in "Opportunities." Perhaps you or your employer immediate openings for professional people. An alumnus VPI might meet the job description. A single note or call to Office of Graduate and Career Plans could result in a job r which could have mutual benefit to another alumnus, r employer, and perhaps you personally. It's an easy way et a great deal of satisfaction.

This alumni placement program is but one example of the lmni Association and WPI working to serve the needs of its luates. There are many other ways, too, and we need to w what is most important and relevant to you. We need to e communication with you and have your involvement. It require little or no effort. Write a letter to the editor of the Journal and express your views on a topic. Call the Office of Graduate and Career Plans when you're looking for a new employee. Contact the Alumni Director when you think there's a possibility your Alma Mater can assist you. Sponsor a project to help educate an undergraduate. Further your knowledge and perspective by enrolling in an Intersession course or a regular seven-week course. Interest a high school student in attending WPI. Attend a Chapter Meeting. Become involved. It's easy. □

SEVEN WEEKS AT THE JAIL

teaching diary
Robert A. Manes, '73

be Worcester County Jail, built in 1789, is the oldest ctional institution in the nation. Because a new jail is r construction, all funds to the jail have been re-routed to project. The building at the current location is left only bare essentials, and consequently the physical structure is ly deteriorating. The third floor, for example, houses a ber of partitioned sections called classrooms, weight- facilities, a pool table, offices, and a chapel (also used lassroom space); it has been condemned for several years.

he English Department of WPI is cooperating with the ational program at the jail, which is under the direction of ain Donald R. Bird, for the purpose of offering courses be inmates. I was the first student from WPI to undertake roject for course credits.

taught a "Short Literature" course (incorporating mainly hort story, poetry, and some student writing), to inmates had a high school diploma, and desired to take part in a ge level course.

ly class met in the rear of the chapel, a terrible sphere in which to teach or learn. Despite its flaking walls ts broken pews, however, it was actually better than the ar classroom space in that it was relatively quiet; it was warm on cold nights. Class meetings were Tuesday, nesday, and Thursday from 6:30 to 8:30 P.M. with a n-minute break at the end of the first hour.

What follows are some observations and descriptions of the riences I encountered in my seven-week adventure.

would like to thank Captain Bird, Director of Education e Worcester County Jail, for his enthusiasm under severe itions, in welcoming student teachers to conduct classes e inmates.

would also like to thank Dr. Lance Schachterle of the English Department, supervisor of the jail teaching ct, whose perseverance and kind attention helped me ugh the perils I met, and made my adventure immensely enjoyable.

Preparation

Captain Bird asked me to submit a probable syllabus for the course so that the jail officials could see exactly what was planned. It accounted only for the weeks up to October 16, because Term A at WPI ended on October 24. He had expected my course to continue all winter, however, in association with his regular classes involving preparation for High School Equivalency Tests. I explained that this was impossible for me because of coursework I was required to take during Term B. Professor Schachterle and I assured Captain Bird that we would make all efforts to find a student to take my place for Term B.

The jail has no book supply, so it was my duty to provide the text. I could get no idea as to how many students I would begin with. I set out, then, to find what I felt would be a sufficient number of texts: ten copies of *Short Story Masterpieces,* an anthology edited by Robert Penn Warren and Albert Erskine. The area book supplier, Atlas News in Boylston, had no copies in stock. I searched the book stores in Worcester and was able to locate seven copies of the text. I was assured that I would be reimbursed for the money I spent. As it turned out, however, I was not reimbursed for those books for which I could not present sales slips. In the end, I had donated $2.45 to the Worcester County Jail.

Tuesday, September 12

This first night of classes saw three obviously misled students present. One was attending in the hopes that he could acquire college credit. When he found none available, he left. Another student, Dale, heard that a "college course" was to be offered; he expected to cover a number of different subjects (hopefully scientific) at the college level. The third student, Larry, came for something to do. At this point, I abandoned my plans for the basic format of the course. Finding that Larry wanted to work on his creative talents in writing while Dale desired to develop an acceptable style of writing in order to write a letter for a Commissioner's Release,* I decided to let the students pursue their individual wishes.

I asked each student to write a paragraph explaining what he hoped to receive from the course, so that I could have a sample of their writing. Dale's example was not written as poorly as he told me it was, but Larry was quite redundant in his phraseology.

ert A. Manes is a WPI senior majoring in Humanities and nology – English. He is from Litchfield, Connecticut.

*A Commissioner's Release is a supervised parole available to inmates with certain charges, at half the duration of their sentence.

I had originally planned to lecture briefly about the history of the short story, then to show how the form was accepted with open arms by the Determinist writers in the later nineteenth century. My first assignment, then, was going to include a Stephen Crane story ("The Bride Comes to Yellow Sky"), "Impulse" by Conrad Aiken, and "Soldier's Home" by Hemingway. In the discussion the following day, I had hoped to talk about the latter two in the light of the Deterministic attitude of the first, and thus partially view the heritage of the Deterministic school of writing. Finding the form of the course dropping away, and desiring to begin with stories I was sure would hold the students' attention, I decided to assign only "Impulse" and "A Bottle of Milk for Mother" by Nelson Algren. "The Bride Comes to Yellow Sky," I felt, would not have been exciting enough to hold their attention. The two stories I did assign, however, dealt with the arrest and conviction of a man — a subject the students could obviously relate to. I knew both stories would be interesting to them, and they could easily be compared and contrasted with each other in a discussion.

Wednesday, September 13

Dale came in announcing that he had read the two stories and that he had enjoyed "Impulse" much more than "A Bottle of Milk for Mother" because it was easier to understand. Larry, on the other hand, had not done his readings because he worked all day in the Jail's kitchen. I carried on a very good discussion with Dale and told Larry that in order to write creatively he must learn to express deeply felt feelings. I asked him to write during class about someone he really loved, specifically how that person makes him feel. On the other side of the paper I asked him to write about a person he could not stand. On the first side he wrote of his girlfriend and their relationship. The person he hated, interestingly enough, was himself, for his mistreatment of his girlfriend. I told him he had the makings of a fine short story and suggested that he develop his ideas further, changing it to a third-person narrative.

I reviewed the students' first writing assignments. I told Dale he needed more confidence, and Larry that he needed to conserve on words. Dale asked me questions about the difference between commas, parentheses, and dashes. I assigned "The Egg" by Sherwood Anderson, "Soldier's Home" by Hemingway, and "The Use of Force" by William Carlos Williams. I asked Dale to choose and write on his favorite story of those he had read. I was trying to get Dale to write what he felt was the author's meaning in the story, and not just to g a synopsis as he tends to do in his discussions.

Larry volunteered to continue to work on his short sto

Thursday, September 14

Tonight, we spent the first hour discussing "Soldier's Hon and "The Use of Force." Larry had not done the read because of work, but he read the brief short story, "The of Force," during class and was able to join in the discuss of it. Dale had singled out a number of colons in the story asked me to explain the colon and its use.

During the break time, I spoke with Dale about problems he found living in jail. When class reconvened, discussion continued. I assumed that the inmates co unburden themselves to few people: other inmates do desire to hear their problems, and the guards (from what students told me) are quite unsympathetic. Contrary Captain Bird's advice, then, I let the students "take over" discussion. The discussion was very informative, and I thi equally important to all three of us.

I assigned three new stories: "Torch Song" by Jo Cheevers, "The Bride Comes to Yellow Sky," and "Win Dreams" by F. Scott Fitzgerald. Dale, who hadn't been able do his writing assignment, said that he would write on "T Egg" over the weekend. Larry would continue his short sto

Tuesday, September 19

This evening, Larry told how his parole had been postponed seems that on the same day he was to meet his parole board was called to court for the purpose of having three mo warrants connected to his original crime served to him. He is the process of appeal now, and must await the outcome befo meeting the parole board again. He began writing his sho story: his personal experience as a heroin addict and its resu He is writing the account in the third person, which is eas for a beginner to handle than the first person. At this poi Larry is unsure of his position in jail: he could receive a long sentence as easily as parole. The protagonist in his sto obviously has the same problem. Larry has consequent decided to fabricate an ending to his story, releasing t character from his problems, and making it possible for Lar to begin another writing experiment.

Dale's paper on "The Egg" posed three separate ideas b he never linked them together. I think he knows what he talking about as far as this story is concerned, so I outlined h

takes and told him to rewrite the paper following those delines.

During class, Dale and I discussed "Torch Song" and "The " further. After break, Dale showed me some sentences he te using the comma, the dash, and the parentheses. (They e quite good). He then asked me some more specifics about mmar and we spent the rest of the time working on mples of sentence structure. Before I left, I assigned him a ading of "Winter Dreams" and "Witch's Money" by John ier.

dnesday, September 20

ight, Larry attended a "Fellowship" (group encounter) ting instead of class.

Dale came in stating he had worked all day, but that he read "Witch's Money." We ventured into the discussion I could see he had read only the first few pages of it. He he didn't feel well: he had terrible indigestion pains. When came back from the evening break, I planned to undertake e more grammar review with Dale, but he asked me: "Now you've been here a couple of days, what do you think of jail?" I stated that I felt that it was a place meant for less, hardened criminals (if indeed there is such a thing) it was horrible to think of is as a "rehabilitation center" eople who went astray. I feel that this type of person will ond much more effectively to love and understanding. t prevails most in this jail's atmosphere is hate.

ursday, September 21

essor Schachterle advised me to make it known to Dale I was no psychologist or social worker. I could not think way to apologize for leaving Dale the previous evening in a state of dismay, and sick when the medical dispensary closed. When I first saw him before class, I asked him if he better. He said his pains were gone by morning. I erated the fact that he must accept that he was in jail for ing caught doing something wrong and his term in jail was pay for that wrong. I explained that everyone must pay ehow when they hurt someone else or society, and Dale's ment, right or wrong, was in the Worcester County Jail. If earns to accept this fact, all the inadequacies in the jail and inmates would bother him less. He simply nodded his d.

Larry did not come to class tonight. When we entered the ssroom, Dale announced that he wanted to do the grammar had planned to do the previous night. I told him that I nted to do or talk about anything that he wanted. He also l his revision of the paper on "The Egg." We spent the first

I planned to undertake some more grammar review with Dale, but he asked me: "Now that you've been here a couple of days, what do you think of the jail?"

hour discussing his writing form, sentence structure, and word choice. We rewrote the paper again, this time together. He seemed to get something out of this.

After break, Dale talked of himself, saying that although he could never tell me what his crime was, part of the reason he was in jail was due to his own sexual imbalance; that he had led a very secluded and reserved younger life. The conversation swung to the topic of vulgarity, and how was he supposed to judge a girl who used profanity, after he had been brought up to believe that cursing was unfeminine for women.

This evening, I planned to stay as late as possible. Contrary to my plans, once again, Captain Bird came over at 8:30 and told me that three more men who had just passed their High School Equivalency exams would join the class Tuesday, and made Dale and me leave. I then asked Dale to write for me his feelings on vulgarity. I tried to tell him that a person molded by society isn't necessarily the *true* person. I posed the question: On the intellectual level, is there any difference between men and women? Dale said that he enjoyed talking to me because I was the only person there with whom he could carry on a sensible conversation. I admonished him that I could only offer suggestions and opinions of the way *I* see things and that if I try to act as a psychologist or social worker, I may hurt him more than help him – he nodded in agreement. I left him abruptly again, but in much better spirits tonight.

I think I have been going at Dale's problem too negatively by telling him it is *wrong* to get nervous or afraid; that other inmates are *non*-sensible. I must try to picture myself in his position: "I imagine it must be difficult being in jail . . . . . .I would be bothered by pesty inmates. . . . .it would be difficult to laugh them off."

With three new students coming in, however, I don't expect to have such intimate conversations with Dale anymore. What will happen only remains to be seen. Perhaps I will visit Dale personally during the day if he desires. I would rather be his friend than simply his "teacher."

Tuesday, September 26

Due to complications with the equivalency tests, the three new students cannot enter the class until next week. Larry came again tonight, and continued working on his paper. Professor Schachterle was there, and talked with Larry and other inmates who happened to come in.

I reviewed the adverb, adjective, preposition, and conjunction with Dale. He also asked me questions about specific grammatical constructions he came across in the stories. After

ssumed that the inmates could nburden themselves to few people: her inmates do not desire to hear eir problems, and the guards (from hat the students told me) are uite unsympathetic.

Meeting eleven students was a frightening experience, but a good lesson: I was not prepared for the unexpected although I should have learned by now. Worse, I panicked and gave up.

the break, we talked about Dale's time in the Army, and compared it to the one he is now leading in jail. I tried to approach the topic from a more positive attitude than I had been showing. I think it is a much more effective viewpoint.

Dale said he would see his social worker tomorrow, and that he might be able to write for his Commissioner's Release very soon. He will have served half his term on October 11.

Wednesday, September 27

Dale and I went over the paper he handed in on his reaction to vulgarity. It was well organized and fairly well supported and written. In his continuation of the revision of "The Egg," however, he still hadn't developed his point sufficiently; I'm sure he understands the story, as he has expressed it verbally. I just have to get him to write these things down. I think he's afraid to waste paper.

Dale had already prepared his letter to the commissioner, requesting the suspension of the second half of his term on the condition that he will remain an outpatient in a psychiatric clinic. It appears that Dale had already been committed to mental institutions for two 21-day periods in the past for actions connected with his problem. Obviously, these terms did little good. Dale feels, however, that the experience of being in jail has already cured him of his problem. The counseling times at the clinic, he feels, will insure confidence in the fact that he has overcome his problem, and will act as a better guide to his future than another 45 days in the nonproductive atmosphere of prison.

Thursday, September 28

Captain Bird reimbursed me for four of the six dollars I had spent on books for the course. He also informed me that he had readvertised the course to all inmates and that there may be a large response; there may be 10 to 15 new men in next week. This is a large jump — from a one-to-one tutorial relationship to a full class. It will require, once again, that I revamp all my plans and go out and buy new books. Captain Bird assured me that I'll have the money for the new books before I buy them this time. He also asked me if I had found anyone to take over after I left; I told him we were still looking.

Larry came with some progress on his story — it looks interesting. I gave him a few more hints. He promises me he'll have it completed by Tuesday, the day before he leaves jail on parole. Henry, a new student, picked up a book and the assignment for Monday (Sinclair Lewis's "Virga Vay and Al Cedar," and "Flight" by John Steinbeck).

Most of the class was spent helping Dale revise his letter send to his probation officer. Captain Bird has to atten meeting by 8:00 P.M. and had to lock the school area. moved Dale and me to the visitors room so we could contir working.

Larry promised Dale he would talk to the chaplain who turn would recommend Dale for release to the commission

The regular jail school schedule begins next week: M day, Tuesday, and Thursday from 6:30 to 8:30 P.M. I v receive three new students Monday night. I am happy tha was able to work singly with Dale, and that we have finish his important letter to the County Commissioner and probation officer. Now, a greater number of students v obviously curtail any lengthy individual relationships w students. I am interested, however, in experiencing this ful class situation.

dy's design was to see how much ympathy he had among his classmates. hen he found he had none, he felt easy and decided he could not get hat he wanted out of the course. left.

nday, October 2

e again, my plans were foiled. I expected five students ee new ones) and instead found eleven. I had only two e books; I panicked. I explained about the course and d each one what they wanted to do. I expected this to up some time; it did — about three seconds worth, it ned. I thought of handing out pencils and paper and having inmates write their intentions for a sample of their writing; scovered that I only had four pencils. I asked Captain Bird, happened to come in at that time, if I could dismiss the s until I bought books.

Fortunately, however, Professor Schachterle was there and volunteered his service to help me through the evening. He ated, more coherently, what I had said and asked if there e any questions. He tried to make Larry read his short y, to start a discussion about creative writing. Larry sed, but instead volunteered to tell what a short story nt to him. He spoke negatively about William Carlos Williams's "The Use of Force," the only story in the text he had read. Since the story was only four pages long, I asked Larry to read it aloud. He did, and a good discussion ensued.

After this discussion, Larry asked if Professor Schachterle would continue with the class and if I would help him end his short story. His short story is by no means a masterpiece, but is still quite good in that it evokes the reader's sympathy for the protagonist.

On my return after break, the students were writing about what they wanted from the course. I collected these writing samples at the end of class. Meeting eleven students was a frightening experience, but a good lesson: I was not prepared for the unexpected although I should have learned by now to be prepared. Worse than that, I panicked and gave up. A teacher should always have on reserve a few relevant topics for discussion to utilize during lulls in classroom conversation. Quite often these ideas and discussions can be very informative. Professor Schachterle advised me to make a list of these things and incorporate them in my journal. Those he suggested, along with others I have thought of, are as follows:

1. What is Literature?
2. Why do writers write?
3. For whom do writers write?
4. Is what they write the truth?
5. Is it open to criticism?
6. What do writers seem to write about most? Why?
7. What is the difference between a short story writer and an orator; a clergyman; a poet?
8. What are the different ways of telling a story — (points of view)? Why choose one over the other?
9. What is the importance of writing?
10. What are some of the problems of writing?
11. Name a famous (favorite) writer — What about him; his style? the period?
12. Ask students to write on a topic of their choice.
13. Have a good, brief, short story or poem handy to read aloud and discuss.

Many of these topics appear to have obvious answers but many times the course of the discussion of one topic will lead to another topic. I must reiterate that this manner of discussion should only be used as a last resort. By no means should the teacher rely on the students to carry on the instruction: students are more at ease if they are told facts, and will at times be unreceptive to venturing their own thoughts.

There came a point while I was reading a poem aloud, where one student was trying to burn another's clothes with a cigarette. Everyone was laughing.

Tuesday, October 3

A few uninterested students did not return tonight. Professor Schachterle and I were able to secure five copies of the texts from other WPI professors and friends.

Those students who had books were prepared for the discussion of "Impulse." A black student named Eddie wanted to read to the class some poetry he had written that day. He did: the poetry was controversial. One poem related to bad treatment of the blacks, another to his escape from the problems of being black through drugs, and the third of how "laws were written by whites for whites." The poetry was good, and very moving. There was no student response, however, for fear of being judged improperly by other inmates. A person disagreeing that blacks are maltreated, for example, feared the possible response from the black population in jail if his position were made known.

Eddie's design was to see how much sympathy he had among his classmates. When he found he had none, he felt uneasy and decided he could not get what he wanted out of the course. He left.

I now have eight students and enough books for all of them. I handed out the books and assigned two stories to read for Monday. I also mentioned that I had read their writing samples and that I would assign a writing practice so that we could overcome their elementary weaknesses.

Thursday, October 5

Discussion went well tonight. Students reacted enthusiastically to "Torch Song" and "Virga Vay and Allan Cedar" – more to the first than the second. One student, Rich, shows considerable intelligence – he has completed 1½ semesters of college and reads various college texts while he is in prison. He began a discussion of the psychology of Cheever's characters and asked if Joan in "Torch Song" were actually a psychic character, or if her existence were merely symbolic.

After break, we talked about prison life. It seems as if only the strong survive here. I assigned three stories for the weekend, and asked the students to choose one story out of all those we had read, and to write about what they thought the author's point was. I specified that they should not rehash the story but examine coherently the author's idea.

Monday, October 9

No school – Columbus Day holiday

Tuesday, October 10

Doctor Charles Heventhal came with me tonight to obse everything went quite well. An older man wanted to sit do with us, and although he hadn't read the stories he was qu to expand upon the points of life brought up. For exam Eloise in "Uncle Wiggly in Connecticut" talked about how male ego desires to be fed to insure its supremacy. "That's sure – I know that for a fact. When my wife tells me. . . " man would interject.

Doctor Heventhal pointed out to me that the stude were definitely of college level intelligence. The stories discussed this evening were quite difficult, but the stude interpreted their meaning and were quite willing to disc them. I handed out four poems which we were to discuss Thursday and collected the writing assignments from th who had them.

Doctor Heventhal brought me to a local pub later, and discussed how the program should be continued. He was qu intrigued and asked me a lot of questions.

Thursday, October 12

I first handed back the writing assignments and discussed so of the structural errors common to all. Most errors occurred long sentences or incoherent paragraphs. The thought cont in the papers, however, was excellent.

The students began to be bored with the grammar revie said that I didn't know how a high school teacher instructi students in grammar each day could maintain a sane class admitted that it would be futile to try to be a disciplinaria An authoritarian does not cure boredom but only antagoniz students.

I didn't know then, however, that the fooling arou which commenced during the boring grammar review was continue through our discussion of the poetry. I tried ignore the interruptions as much as possible, but had to lau with the students at some of the things that were happenin There came a point, however, while I was reading a poe aloud, where one student was trying to burn another's cloth with a cigarette. Everyone was laughing. I looked up and sa (I really can't remember exactly) something to the effect th they could fool around anytime, but asked why they we doing it in class, wasting my time. I told them it was not eas speaking to the air. My tone was not severe but they knew tha I was upset. They immediately settled down. May I suggest t my successors, as long as you are sure that you are th students' friend, that showing the student he has upset yo

rrived at the jail and was informed at school had been canceled because ere was no heat in the jail.

sonally, not simply you as the *teacher,* is an effective way regain the attention of amiable students. At least it was for

The poetry was a bit more complex for the students than I anticipated. I had assigned, among others, the poems cause I Could Not Stop for Death" by Emily Dickinson "Winter is Another Country" by Archibald MacLeash, ch are concerned mainly with death. The students ques- ned the poets' exploitation of this topic, feeling it is morbid perverse. I tried to explain, however, that poets choose th as a subject because of its mystique; since it is the only ng they are certain to encounter, they care to speculate on

"To A Waterfowl" was difficult only because of its archaic guage. Once we went over it stanza by stanza the students its meaning readily.

I mentioned the structure of these poems but did not feel it is very important to go into that subject in depth. The t's meaning is most important in a course such as this.

"Mending Wall" by Robert Frost was the poem I expected receive the largest response from, but it seemed to be the st difficult for the students to grasp. Its subject did, vever, lead us into an enjoyable discussion of living pendently in the woods as opposed to living in the city.

nday, October 16

night, I read aloud to the class "The Secret Life of Walter ty" by James Thurber. We discussed the story; the students ired to hear another one. I let Dale read them the short ry "If Grant Had Been Drinking at Appomatox," which was y entertaining.

For the second hour, I asked the students to write an lass theme on a topic of their choice. Two students ished before class was over, and I discussed their work with m individually. The expression was quite good. There were ne basic mechanical problems, but these students are sive; the atmosphere of the jail, I would venture to say, has ch to do with this. The other themes I read later were ually as good.

For Tuesday, I assigned two more stories.

esday, October 17

ust admit that I am saddened by the fact that this is my t-to-last meeting with the students. The term has certainly n a valuable experience. Professor Schachterle and two dents who hope to pick up the program when I leave were present. We discussed, for the first hour, "Soldier's Home" by Hemingway and "You Could Look it Up" by Thurber. The discussion was, as usual, good.

For the second hour, although I had planned to read the class an Ambrose Bierce story, "An Occurrence at Owl Creek Bridge," we discussed various life styles under the pressures of society. It was altogether informative and worthwhile, and fit in well with the themes of many of the stories we have been reading.

For Thursday, I assigned two more stories.

Thursday, October 19

I arrived at the jail and was informed that school had been canceled because there was no heat in the jail. I volunteered to come back Monday to collect books and pick up on loose ends.

I received a note Friday stating that Monday's classes were canceled due to the Veterans' Day holiday.

When I finally was able to meet my class again on Tuesday, there was a film scheduled for the second hour of class. We just talked for the first hour, and enjoyed the film after the break. I was certain to say good-by to each student individually and wish him my best.

Conclusion

The teaching program at Worcester County Jail was one of the most informative educational experiences that I have ever had. My seventeen meetings provided me with a dual insight. First, I was able to learn more about living conditions in a prison, and of the dire need for prison reforms. The physical structure of the Worcester County Jail is atrocious; the walls lack paint, the windows, glass. The fact that my last scheduled class was canceled due to lack of heat in the jail is typical of the degenerated environment imposed on inmates. I question how a man is supposed to be "rehabilitated" in such a forboding environment.

Far worse than these environmental discomforts, however, is the physical and mental stress on the inmates. Many of the more aggressive prisoners constantly test their counterparts, single out those who offer only an emotional response, and continually ridicule and torment them. This atmosphere of hatred and violence is so intense that one of my students, a relatively fearless man who is able to work daily outside the jail on a farm, still suffers from nervous anxiety and fits of depression. The Worcester County Jail houses inmates serving up to two year sentences, and prisoners transferred in from

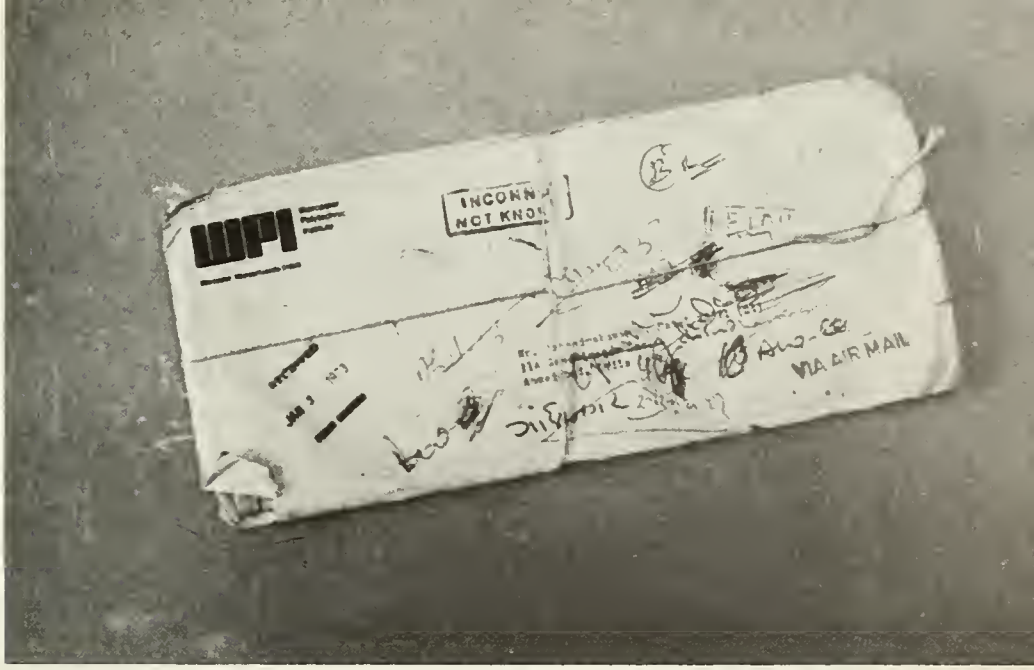
I encountered over and over the fact that I could not rely on long-range plans. But in the long run I found what *was* accomplished equaled or surpassed what I had planned to accomplish.

other prisons for the final few months of a longer term. I have been told repeatedly that conditions at this jail are excellent compared with the larger institutions such as Bridgewater and Walpole. I could not imagine what would have happened to a person such as Dale had he been incarcerated with criminal deviants serving life terms.

Secondly, I learned quite a bit about the process of teaching. I was happy to be able to work for part of the time in a tutorial situation as well as part of the time with a larger class. I found that a relaxed atmosphere, in which the teacher sits within a circle of students, thus becoming part of the class, is an effective means of stimulating conversation. The teacher in this situation is not alienated from the student; the student feels on a more equal basis with the teacher, and is consequently more apt to ask questions. The teacher must not, however, try to evoke discussion to the degree that the discussion becomes a game of giving correct answers to the teacher's initial questions. This leads to boredom and disinterest in the continuance of a discussion.

I encountered over and over the fact that I could not rely on long-range plans. The course of events often disputed my expectations, but in the long run I found what *was* accomplished equaled or surpassed the learning experience I had *planned* to accomplish. I had planned, for example, a relatively rigid course of instruction – giving examinations and adhering to a prescribed syllabus. This format was suggested to me on the basis that inmates who wanted to reform themselves would logically seek out some sort of order to bring to a like that lacked order. My real wish, on the contrary, to conduct a freer class in which the student, through reading and questioning, prescribes what he wants to learn. I was quite relieved, then, when I saw that the ordered curriculum would have been futile. I was able to conduct the course at my pleasure, and judging from both oral and written response the students received something from the course. The net result of my involvement in the course was valuable experience in teaching, preparation, discipline, and understanding people. I was also able to read many interesting short stories; the discussions of the stories provided many insights I might have never received by myself.

Many inmates at the Worcester County Jail are interested in continuing their education, if for no other reason than to break up the monotonous routine of prison life. Captain Bird and the inmates are consequently eager to continue programs such as this, not only in English Literature, but in foreign languages, Mathematics, Science, History, Philosophy, etc. The opportunity can only be beneficial to all involved. The crucial requisite is interested, competent student volunteers. □



]ot rain or snow or hail or sleet or (ark of night . . .

l case you've ever missed getting a copy of the *Journal* or *Newsbriefs,* you r y have blamed it on WPI, or the Alumni Association, or the mails.

t sometimes, you know, it isn't any of those things. And the mail services n try pretty hard to deliver something before they give up. Witness this copy *Newsbriefs,* mailed to an alumnus in India on July 10, 1972. A careful unt shows 18 Indian post office stamps on the back side, as well as an leterminate number of forwarding addresses written (in three shades of red and five shades of blue) on the front, each crossed off in turn as it proved ong. The envelope finally returned to the WPI public relations office on nuary 3, 1973. It was much the worse for wear, but someone along the line d wrapped it nicely with string.

S. If anyone out there knows the whereabouts of Mahendrakumar K. Patel, S '71, would he please let us know . . .

Bill and the Brother Machine

by Russell Kay

It all started around the end of my first year. I was getting pretty bored with just classes — so I finally decided to *do* something. I went down to the Worcester Volunteer Action Center and I discovered that there are some 3,500 fatherless children in Worcester County, and that got to me."

William Delphos, '74, the 21-year-old director of Student Programs for Urban Development, Inc. (SPUD), heads up a cadre of over 300 student volunteers working in several major programs in the Worcester community. The project closest to Bill's heart, though, is the Big Brother program.

From the Volunteer Action Center, Bill found his way to the Worcester branch of Big Brothers of America. This organization was formed to provide, on a one-to-one basis, male companionship — a father figure — to fatherless boys.

But then things ground to a halt for Bill. The Big Brother organization was against the idea of using college students as big brothers because the students were only around for nine months a year and would normally be involved in the program for no more than two to four years.

Persistence paid off, though, and this was an idea whose time had come. Delphos won a trial of what was called the "Associate" Big Brother program, and then started advertising at WPI for volunteers. Within a short time he had 75 applicants.

The method used to pair big brothers and little brothers is a careful and sometimes slow process of matching interests and, hopefully, personalities. First of all, contact is made with the child's mother, to ensure that nothing is against her wishes — that would only aggravate an already complicated situation, to the child's detriment. With the mother's approval, the child is tentatively matched with a volunteer.

By serving as a sort of secretary in the Big Brother organization, Delphos was introduced to the matching process, and to the need for care right at the beginning. Within four weeks or so, they had matched some forty students with little brothers.

Actually, according to Bill, there is a unique advantage to using college students as big brothers. Because of his age, the student is more like a real big brother and can relate to his little brother in a way that is probably denied to someone older. He can be a friend, pretty much on the little brother's own level.

Bill worked on the program for nearly a year, matching up big and little brothers, "policing" the volunteers to make sure that they were spending enough time with their charges (the usual expectation is a couple of hours, one visit a week).

Last May, while organizing a SPUD banquet, Bill was the office of a local businessman. Talking with his secretar Bill discovered that she was separated and had a twelve-yea old son. "Up to that time, I had felt that I had too much t do, organizing the program, to take on a little brother mysel But at this point I thought that maybe I could handle it, a least on a limited basis." He got approval from the Big Broth office and that weekend took his little brother to the WPI gy to play basketball, wrestle, and in general just enjoy some tim together.

"You know, you can do some pretty screwy things an have fun. When we were in the showers, we started playin hockey with a bar of soap and our bare feet — and we kept up for 45 minutes!" Bill goes on:

"He talked sports with me for a long time — talking abou the teams, and big names, and scores and things. It reminde me of the way I used to talk with my older brother. There just about the same age difference."

Athletics and sports play a big part in the program because most boys are interested in them and they form readily accessible common ground. One of the first thing Delphos did after organizing the program was to see Professo Robert Pritchard, head of the WPI department of physica education and athletics, to arrange for free passes for the littl brothers in the program. This enables the student big brother to offer more to their little brothers with no hardship t themselves. Free admission to movies sponsored by Lens an Lights Club was also arranged, along with meals in th cafeteria.

There have been some problems with the project. Som students volunteered with not the best intentions, seeing th

"When we were in the showers, we started playing hockey with a bar of soap and our bare feet—and we kept it up for 45 minutes."

"He told me that he thought I was terrible the first time we met, but he got to like me more as time went on until he liked me so much he really couldn't say it well."

brother as some kind of project, material for a social ice term paper, a ready-made case study. Volunteers like e are assiduously weeded out; the volunteer's commitment t be to the little brother, not to some other motivation. 'e're not trying to play God, but we just can't allow the kids e program to be hurt," says Delphos. "We don't have any uous objection to a volunteer writing a paper about his brother, but that can never be the reason the volunteer into the program. The child – and concern and friendship im – always comes first."

The little brothers are screened somewhat, too. "We have y away from the kid with severe emotional hangups, the delinquents. As big brothers, we're not really social kers; the emphasis is low-key, based on trying to develop a friendship between two people."

"Another thing, you have to be consistent. You can't say thing today and then try and qualify it tomorrow. If e's anything phony, those kids will spot it right away. You to set a sincere example, because your little brother needs e able to depend on you.

"You know," says Bill, "I see a lot of myself in this ram. If you hit it off at all, then after a while your little hers starts to reflect you a little bit – starts to show your ience. At one point, I told my little brother I thought I changed a lot during the eight months we had been ther. I was more interested in people and had been giving ght to my career plans. He said that he had changed a lot, that at the beginning he had not liked people very much had few friends at school – but that just the previous k he had formed a club of boys and was president. He told that he thought I was terrible the first time we met, but he to like me more as time went on until he liked me so much really couldn't say it well. I thought this was really ortant since he talked so openly about himself. This was first time he had done this.

"We share a lot of good times, my little brother and I. And etimes I can do something for him that's really nice. For nce, his birthday is four days after Christmas, and he just ed thirteen. This was kind of a not-so-pleasant birthday im this year – no one seemed to know what to get him, I was away. Well, he's a real nut on basketball, so I got a ticket to the Celtics game and mailed it from Chicago. I I could have been there to see him open it; his mother me he really lit up. Now he can't wait until next nesday, when we're going."

A short while after Bill started the Associate Big Brother program, he was approached by a student from Holy Cross, a leader in a group called Student Programs for Urban Development, Inc. – SPUD – who volunteered the backing and resources of SPUD in exchange for Bill's becoming the WPI representative of SPUD, publicizing its activities on campus and helping recruit new members.

"I was kind of leery at first. . . . you get awfully conscious of the possibility of being exploited. . . . but it seemed as if it would work out well for both our groups," remembers Bill.

SPUD actually began at the College of the Holy Cross in 1965, a period when student social involvement in community affairs was at a peak, when if you were a student it was the "in" thing to do – a successor to the student-oriented civil rights movement in the early sixties, a predecessor to the political activism that was to shake the nation in the late sixties because of the war in Viet Nam. SPUD started off oriented toward urban problems. It worked with tenants associations concerned with public housing, with tutoring projects, with a number of "street" problems.

Gradually, SPUD's attention began focusing on work with children – and usually children from the same urban areas SPUD had previously worked in: the Model Cities area, and the Great Brook Valley and Plumley Village subsidized-housing projects. And with all of this, it outgrew Holy Cross and brought in significant participation from students at WPI, Clark University, and other schools in the Worcester Consortium. Naturally, when they heard about the growing Associate Big Brother program, they were interested in affiliating the two.

SPUD (which is entirely student-run) has some funding of its own – a small part, in fact, from the WPI Student Affairs budget – and it has used this in several ways to benefit the Big Brother program. Last year, the Big Brother association held a Christmas party for all the participants; SPUD dipped into its pocket and furnished Bozo the clown and a magician for entertainment. Other resources are SPUD's two vehicles, which are available to big brothers to take their little brothers on excursions.

When Delphos was asked how many students are involved in SPUD, he reluctantly said "around 300." He was quick to qualify that: "It's really hard to say. The program is kind of self-expanding. Just last week I matched up a seventh-grade girl with a student math tutor. Now the girl has a friend who would also like to be tutored, and the student tutor has

arranged for one of her friends to do that. So that they're both really a part of SPUD, but I almost didn't know about the second one."

"A lot of our volunteers are WPI students; a lot are from Holy Cross. Clark has many of its own programs, which are organized differently from SPUD's. The Big Brother program alone has, I would guess, some sixty to seventy students involved now. I think this will probably continue to grow for at least another couple of years before any leveling-off takes place."

Big Brothers is but one of several programs included in SPUD, which also acts as a kind of clearing-house for other volunteer action groups, including the Worcester Tenants Association and The Great Brook Valley Child Care Comprehensive Service.

The other main project centers are located at:

1. Worcester Detention Center

Here, ten volunteers each spend one night a week providing supervision for swimming, bowling, ice-skating, movies, and other kinds of recreation. French and Spanish-speaking volunteers are available for tutoring. "It's kind of hard to say how many people SPUD reaches," says Bill. "At the Detention Center, no one is kept there longer than fourteen days. . . the turnover is terrific. Our volunteers keep at it, and they come in contact with hundreds of new people every month. Who can say how many in the several years this program has been in operation?"

2. Woodland Community School

Volunteers are presently working in such areas as tutoring in math, reading, and English as a second language. The after-school program encompasses such interests as dramatics, meteorology, cooking, ceramics, typing, music, athletics, arts and crafts, creative play activities, or any other thing which the children and volunteers are interested in.

3. Green Island

A tutoring program here involves remedial work and behavior modification in conjunction with the Worcester public school system. Also included are a drop-in center and an arts and crafts program. A free breakfast program runs in conjunction with this project in the Kelly Square area.

4. Worcester Rehabilitation Center

For this program, volunteers are trained to work with visually and physically handicapped children up to twelve years of age. Working on a one-to-one basis, the volunteers pick up in the evening, two nights a week, the work begun during the day, carrying it along in the child's home.

Bill Delphos

5. South Worcester

Volunteers provide a number of different services he tutoring, recreational activities, and special interest grou such as a science club and stamp collecting.

"The South Worcester program is really phenomena according to Delphos. "A year ago it started with may twenty kids from the community. Now there are over t hundred, and they've had to go to split sessions! Bernie Con (Holy Cross, '74), who is co-director of SPUD, has done really fantastic job in South Worcester. One thing that really worked out well is to insist that the parents of the k spend some time on a regular basis with the program. Some them come kind of grudgingly, but they usually get turned by something and add considerably to the value of project."

"You have to be consistent. If there's anything phony, those kids will spot it right away."

"We didn't need the money, really; we just wanted to let people know about us. But I am firmly convinced that if you can get someone not just to come but to also invest ten or twenty dollars of his own money, then he will remember you a lot longer."

E DINNER

e of the standout events in SPUD's seven-year history was a ner held last May. It served to announce SPUD's presence the Worcester community, and it raised over $3,000 for the anization. It was in large measure the work of Bill Delphos.

When the concept was formulated, Bill had some definite s of how the dinner should be handled. "We didn't need money, really; we just wanted to let people know about But I am firmly convinced that if you can get someone to just come but to also invest ten or twenty dollars of his n money, then he will remember you a lot longer."

So the dinner began. First of all, Bill got a hall in the new rcester Center donated. Then he went to grocery distribu-cs, meat packers, wine wholesalers, asking for donations. 'I tried getting all of them into the act by saying 'well and-so gave us three cases of canned peas, and we're going be thanking them in the program for it. Would you like to there too?' " And the snowball kept rolling. "A rental npany lent us, free, 650 place settings, plus ash trays, ving pieces, the works. The guy said: 'Look, I'm letting you e over $1,800 worth of rental equipment here. Could you rinse it off a little afterwards so it's not all caked on?' ll, we took everything back to my fraternity house erwards, and everyone chipped in and we washed every-ng. We had racks of dishes everywhere, drying, until we ld take them all back!"

With all of this, there still remained the task of getting ple to come. Here, Bill used his tried and proven tactics. d go to see one company in town, and they'd maybe agree buy a few seats. And I'd say, 'Gee, the XYZ company ught a whole table. You know, these are recognition tables, d the company's name will be put on it, and everyone there ll know about their commitment to the goals of SPUD.' " It rked just fine . . . and over two hundred tickets were sold.

After plans were well under way, the SPUD dinner also ned into WPI's first interactive project. He was discussing it th John van Alstyne, dean of academic advising, one day, en Dean van Alstyne asked: "You're studying on the WPI n, aren't you? This is a perfect example of an interactive ject [a project outside the student's major field, which ates his studies to social needs]." And so it was that the ner, which Bill was committed to anyway, turned out to lfill one of his degree requirements. In order to meet project quirements, Bill had to devise a title for the dinner in 25 ters or less. The result: *Selling a Share in Youth.*

Bill Delphos has obviously already made a mark at WPI. Majoring in business, his primary interest now is in organizational structure, and he intends for his qualifying project in his major field to do a study of institutional effectiveness among small New England colleges. Later on, he would like to look at the effects of Russian technology on the fishing community of Gloucester, Massachusetts. He has been thinking of going to England next year to study. . . and maybe even to Russia (he taught himself Russian a few years ago). Bill is the son of Philip R. Delphos, '26, a WPI trustee emeritus who lives in Falmouth, Massachusetts.

"While I'm not quite sure just what I want to do, I have decided that I am going to play the organizational game for a while," Bill says. Do you suppose we ought to warn the Russians he's coming? □

Completed Careers

RICHARD J. DEARBORN, '03

Richard J. Dearborn died November 20 in Morristown, New Jersey. He was 90.

Mr. Dearborn, who was born in Manchester, N.H., graduated as an electrical engineer from WPI and later received his law degree from Chicago School of Law. A retired patent attorney, he had been a partner in the law firm of Cooper, Dunham, Dearborn, and Henninger.

For a number of years he was associated with Texaco-Inc., and had been president and director of many of the firm's affiliates.

A member of the American Bar Association and the American Patent Law Association, Mr. Dearborn was the author of "Patents". He was also active in the Alumni Association and at one time served as vice president of the Pittsburgh chapter. In 1963 he received the Robert H. Goddard Award from the association in recognition of his professional achievements.

EDWIN M. ROBERTS, '04

Edwin M. Roberts, 92, died on October 18, 1972 in Hyannis, Massachusetts.

A native of Andover, he graduated as a mechanical engineer from WPI in 1904. From 1922 until his retirement in 1949 he was a teacher of industrial arts in Worcester high schools. Earlier he had taught at Lebanon, N.H.; Governor Dummer Academy; Stamford, Conn.; and at Holyoke and Lowell, Mass.

Following World War I he joined the rehabilitation programs at Saranac Lake, N.Y., as a Veteran's Bureau training officer.

SIDNEY W. FARNSWORTH, '06

Sidney W. Farnsworth, a WPI trustee emeritus, died in December in New Jersey.

The retired chairman of the board of Torrington (Conn.) Mfg. Co., he was born in Lancaster, Mass. on October 23, 1886. After receiving his BS in electrical engineering from WPI, he became associated with Underwriters Laboratory, Inc., Chicago, and later with Westinghouse Electric in Pittsburgh. In 1917 he became an associate scientific attaché serving the American Embassy in London.

After holding positions as chief engineer for the U.S. Post Office Department, Washington, D.C., and vice president of Case-Pomeroy & Company, New York City, he created the New York investment and management firm of S. W. Farnsworth, Inc. He also became president of Amos L. Be Company, Inc., served with the OPM Washington, D.C., and acted as a member the Navy Price Adjustment Board in N York.

In 1945 he joined the Torrington Compa as president and in 1953 he became cha man of the board.

Mr. Farnsworth, who was a member Alpha Tau Omega and Sigma Xi, complet the full four-year course at WPI at the a of 19, the youngest graduate ever record at the college. From 1952 to 1962 he w an active trustee. In 1967 he received honorary doctorate of engineering degr from WPI.

PERCY C. SMITH, '07

Percy C. Smith died in East Orange, Ne Jersey on September 7, 1972.

Mr. Smith, who was born on Feb. 7, 18 at Amherst, Mass., studied electrical en neering at WPI. Following graduation became associated with the Ohio Bra Company, Mansfield, Ohio, the Unit States Patent Office, and Roberts, Robe & Cushman, Boston.

For 30 years he was a patent attorney Western Electric Co. and Bell Telepho Laboratories, New York City. He retired 1950.

WILLIAM R. WOOD, '07

William R. Wood passed away on Augu 2, 1972 in Atlanta, Georgia.

He was born on April 1, 1877 in We Martinsburg, N.Y., and later studied ele trical engineering at WPI. After working the Brooklyn (N.Y.) Rapid Transit, and t Third Ave. Railway Co., New York City, moved to Brazil where he was associat with the Rio de Janeiro Tramway L & P C and the Sao Paulo Tramway from 19 until his retirement in 1950.

Mr. Wood belonged to the Americ Electric Railway Association and the Ame can Chamber of Commerce in Sao Paul Brazil.

ALFRED E. GALE, '13

Alfred E. Gale died November 15, 1972 his home in Penney Farms, Florida.

He was born in Newport, Vt., on Mar 2, 1889. He was a mechanical engineerin student at WPI and a member of Theta C Fraternity.

r 39 years he was an employee of New
and Fire Insurance Rating Association,
on, Mass. He retired in 1959.

LIP P. MURDICK, '16

ip P. Murdick, 77, died September 16,
2 in St. Petersburg, Florida.
e was born in Rutland, Vt., and attended
where he graduated as a chemist in
6. For 38 years he was a bio-chemist
the New York State Department of
lth in Albany.
Ir. Murdick was a member of Phi Sigma
ba and the American Chemical Society.

PH N. S. MERRITT, SR., '17

h N. S. Merritt, Sr., 78, passed away on
ber 4, 1972 in Lake Worth, Florida.
e was born in Cohoes, N.Y., and in 1917
raduated as a mechanical engineer from
where he was a member of Tau Beta
Sigma Xi, and Skull.
or 34 years he was a product safety
neer at Norton Co., Worcester, retiring
959. He was also a retired Navy Com-
der and had served in World War II.
earlier years he was associated with
mpton and Knowles and Heald Machine
Worcester and Nordyke & Marmon,
anapolis.
Ir. Merritt, who was a former secretary-
surer of the Worcester Chapter of the
mni Association, was a member of ASME,
the Massachusetts and National Society
rofessional Engineers. He was a registered
essional engineer in the state of Massa-
setts.

ARLES A. THRASHER, '17

rles A. Thrasher passed away August
1972 in Greenville, South Carolina.
e was born in Buckland, Mass. on Sept.
891. He received his BS in civil engi-
ing from WPI. He was a member of
bda Chi Alpha Fraternity.
ntil his retirement Mr. Thrasher served
many years as vice president and chief
neer at Daniel Construction Company,
, Greenville, S.C. He belonged to the
th Carolina Society of Professional
neers.

RED A. FIGENBAUM, '24

ed A. Figenbaum of Teaneck, N.J.,
ed away recently.
native of West Springfield, Mass., he later studied electrical engineering at WPI where he was a member of Alpha Tau Omega.

He retired as personnel director at New York Telephone Co., New York City after more than thirty years of service. Formerly he was district traffic superintendent.

PAUL A. DAVIS, '25

Paul A. Davis, 69, died in Red Bank, New Jersey last October.

A Worcester native, he received his BS in electrical engineering from WPI in 1925. He was associated with Electronics Associates, Inc., West Long Branch, N.J. for many years and was directly involved in the formation of the company. Prior to his retirement in 1968 he held the position of coordinator for international marketing.

From 1940 until 1952 he was employed as administrative director of the New Equipment Introductory Staff, Office of the Chief Signal Officer, U.S. Army, at the Pentagon, Washington, D.C.

Mr. Davis was formerly president of the New Haven Chapter of the Alumni Association.

RICHARD P. HOULIHAN, '26

Richard P. Houlihan, former president of the Gavitt Wire and Cable Co., died November 11, 1972 in East Brookfield, Massachusetts. He was 68.

He was born in Springfield. In 1926 he graduated from WPI as an electrical engineer.

In 1936 he joined Gavitt Wire and Cable Co., where he was appointed general manager in 1954, vice president in 1957, and president in 1959. He retired in January of 1972. Previously he had worked for Westinghouse Electric, Erie Resistor Corp. and United American Bosch Corp.

During World War II he was a Marine lieutenant colonel.

HARRY B. ZACKRISON, '26

Harry B. Zackrison, 68, who retired two years ago as chief of the engineering division for military construction of the Army Corps of Engineers, died November 16, 1972.

Mr. Zackrison was a pioneer in improved design of military construction. In 1970 The American Concrete Institute awarded him the Turner Gold Medal in recognition of his outstanding contributions. He also received the 1970 F. Stuart Fitzpatrick Memorial Award from the leading professional societies in the construction industry. It was the first time the Fitzpatrick award was made to an engineer and government official.

In 1969 he was named by *Engineering News-Record* as one of the outstanding men in construction for his role in establishing the Corps Construction Engineering Research Laboratory. His achievements have also been cited by Lt. Gen. F. J. Clarke, chief of engineers.

He was born in Bridgeport, Conn., and graduated from WPI as a civil engineer. He was a member of Tau Beta Pi and Sigma Xi.

EVERETT D. GIBBS, '28

Everett D. Gibbs, vice president of Communication Associates, Inc., Huntington Station, New York, passed away January 13, 1972.

He was born in Clinton, Mass., on May 14, 1907. In 1928 he received his BS in electrical engineering from WPI where he was a member of Alpha Tau Omega Fraternity.

Prior to joining the Associates in 1959, he was affiliated with Erco Radio Labs, Garden City, N.Y.; Radio Receptor, Inc., New York City; and Bendix Radio Corp.

Mr. Gibbs was a member of IRE and the U.S. Power Squadron.

CHARLES L. LAVEZZOLI, '38

Charles L. Lavezzoli passed away in Connecticut on June 20, 1972, at the age of 56.

Born in Chester, Conn., he later graduated from WPI with a degree in civil engineering. He served as a bridge engineer with the Connecticut State Highway Department and had been with the department since 1938.

He was a member of Phi Kappa Theta and Sigma Xi.

EDWARD J. BOROWIEC, '70

Navy Ensign Edward J. Borowiec, 23, was killed in a bus-car accident in the Philippine Islands on October 19, 1972.

He was born in Chicopee, Mass., and later received his bachelor of science degree in civil engineering from WPI. He enlisted in the Navy in 1970 and received his commission at Newport, R.I., in July of 1971.

Ensign Borowiec, who was only recently assigned to the Philippine Islands, was a member of Phi Kappa Theta Fraternity.

Your Class and Others

1908

DONALD D. SIMONDS, class secretary, is now located at 2 Alexander Ave., Nutley, N.J. 07110.

1915

FREDERIC R. COX currently resides in Vincentown, N.J.

1918

MAURICE W. RICHARDSON has retired again. For the past twelve years he has been executive director of the Amsterdam (N.Y.) Community Chest but as of January he concluded his duties. Previously he was retired as manager of engineering for Mohasco Industries.

1919

GEORGE W. RORABACK, JR., is retired as vice chairman of the board, H. B. Smith Co., Westfield, Mass.

1922

JOHN V. RUSSELL, the former chairman and president of Philadelphia Manufacturers Mutual Insurance Co., Philadelphia, is now retired.

1925

DAVID J. MINOTT has retired as chief, specification section, U.S. Army Electronics Command, Ft. Monmouth, N.J.

1926

EDMUND J. McGARRELL, formerly wi Newport News (Va.) Shipbuilding, has r tired. . . . ARMAND L. PAQUETTE has r tired as marketing manager, missile launchi and handling department, Westinghou Electric Corp., Sunnyvale, Calif. . . . WILLIA J. WILLIAMSON is with Niagara Front Travel Service, Niagara Falls, N.Y.

1927

EUSTACE I. MERRILL is a retiree. He h been associated with Johns-Manville Pro ucts Corp., Manville, N.J. . . . THOMAS STEWARD has retired. He was with Elect Assembly Products.

1928

LYMAN W. CROSS has retired from t U.S. Envelope Co., Springfield, Mass., whe he was manager. . . . DR. EDGAR FLINTON, former dean of graduate studi at State University of New York, Albany, now retired. . . . WILLIAM M. LESTER h retired as president and chief executi officer of Pyro Plastics Corporation, Py Park, Union, N.J. (A subsidiary of Gatewa Kansas City, Mo.) Mr. Lester is a we known plastics engineer and inventor injection molding and die and pressu casting equipment. He is the founder Pyro Plastics and has been with the co pany for more than 33 years. He will rema as consultant to the firm and will also op a practice of engineering and consulting the industry. . . . HARLAND L. PAGE h retired as personnel manager and purcha ing agent at Lunt Silversmiths, Greenfie Mass.

1929

GALE E. FLINT has retired from Unit Illuminating Co., New Haven, Conn., whe he served as executive assistant vice pre dent of engineering and planning. . . . EDSO L. MERRILL, former director of training a

stics at Litchfield Farm Shops, Inc., rbury, Conn., is now retired and living fferson, N.H.... NICHOLAS J. RUBERTI etired as a research chemist.

30

ARD R. DELANO, or "Foxy Grandpa" 's known in the world of bicycle racing, the news again. This time the Oct. 9, issue of *Sports Illustrated* recorded xploits in the four-day Italian Swiss ny 100, a series of time trials held in ern California. Racer Delano ground 107 miles in six hours in a rain storm. complained afterwards: "Makes me der than hell; my average was 17.995 . I wanted to hit 18!"

ARMELO GRECO has retired after 34 of service to education in the state of necticut. During his career he served rector of Wilcox Technical School and lorwalk and Waterbury State Technical utes. He was also an instructor at Technical Institute, Hartford, while he with the state department of educa- For the past seven years he has been a ning officer in the office of the state nical colleges. He was a consultant in lesign of the New Hampshire Technical ute and the educational planning of the ington (D.C.) Technical Institute. . . . TNEY F. SCHUKA has been appointed building inspector for the town of ham, Mass. . . . CLYDE T. SMITH has d as a radio transmitter engineer for Global Communications, Inc., Rocky t, N.Y., and has moved to Santa Rosa, ... HAROLD G. WILLIAMSON re- y retired from the Federal Department ransportation. Formerly he was chief, surements branch, National Aviation ity Experimental Center, Atlantic City, Now he and his wife live at Merritt d, Fla. . . . CHARLES L. WRIGHT is ently self employed in Merchantville,

1931

JOHN F. DEVANEY has retired from his duties with the U.S. Army, Civil Defense, at the Pentagon in Washington, D.C. . . . MICHAEL C. SODANO now holds the position of president of Asian Economic and Technical Services Company, Tokyo, Japan, Branch. . . . HARRY N. TYLER, the former vice president of Mead-Morrison Co., Cambridge, Mass., has retired.

1932

JOHN D. LANE has been named as assistant assessor for the City of Worcester. While working for the city he is discontinuing his private real estate business.

1933

EDWARD G. CONWAY has employment with Pratt & Whitney, East Hartford, Conn. . . . DR. RAYMOND B. CRAWFORD has retired as a science teacher at West Seneca (N.Y.) Central School. Previously he was a group leader for National-Aniline Division of Allied Chemical Corp., Buffalo, N.Y. . . . THOMAS E. DECKER is with County Photo Compositing Corp., Holden, Mass.

GILBERT U. GUSTAFSON is retiring as manager of the Metropolitan District Commission in Hartford, Conn., after 38 years of service. He was appointed deputy manager for engineering for the Water Bureau in 1961 and five years later received the additional appointment of deputy district manager. In 1971 he was appointed district manager. In 1969 he received the H. Jackson Tippett award by the Connecticut Society of Civil Engineers for extraordinary service to the civil engineering profession and to the society.

DONALD W. HASKINS has been elected chairman of the Salt Lake (Utah) section of the American Society for Quality Control. Recently he was promoted from senior reliability engineer to associate scientist on the Poseidon Fleet Ballistic Missile Program at Thiokol Chemical Corporation. He writes: "Within the next two years 75% of the nuclear submarine fleet will have the older Polaris missiles replaced with the larger Poseidon missile. Advanced systems known as the Trident are being developed here to replace Poseidon eventually."

1934

DWIGHT J. DWINELL, the former manager of equipment design at Sylvania Electric, Salem, Mass., has retired.

1935

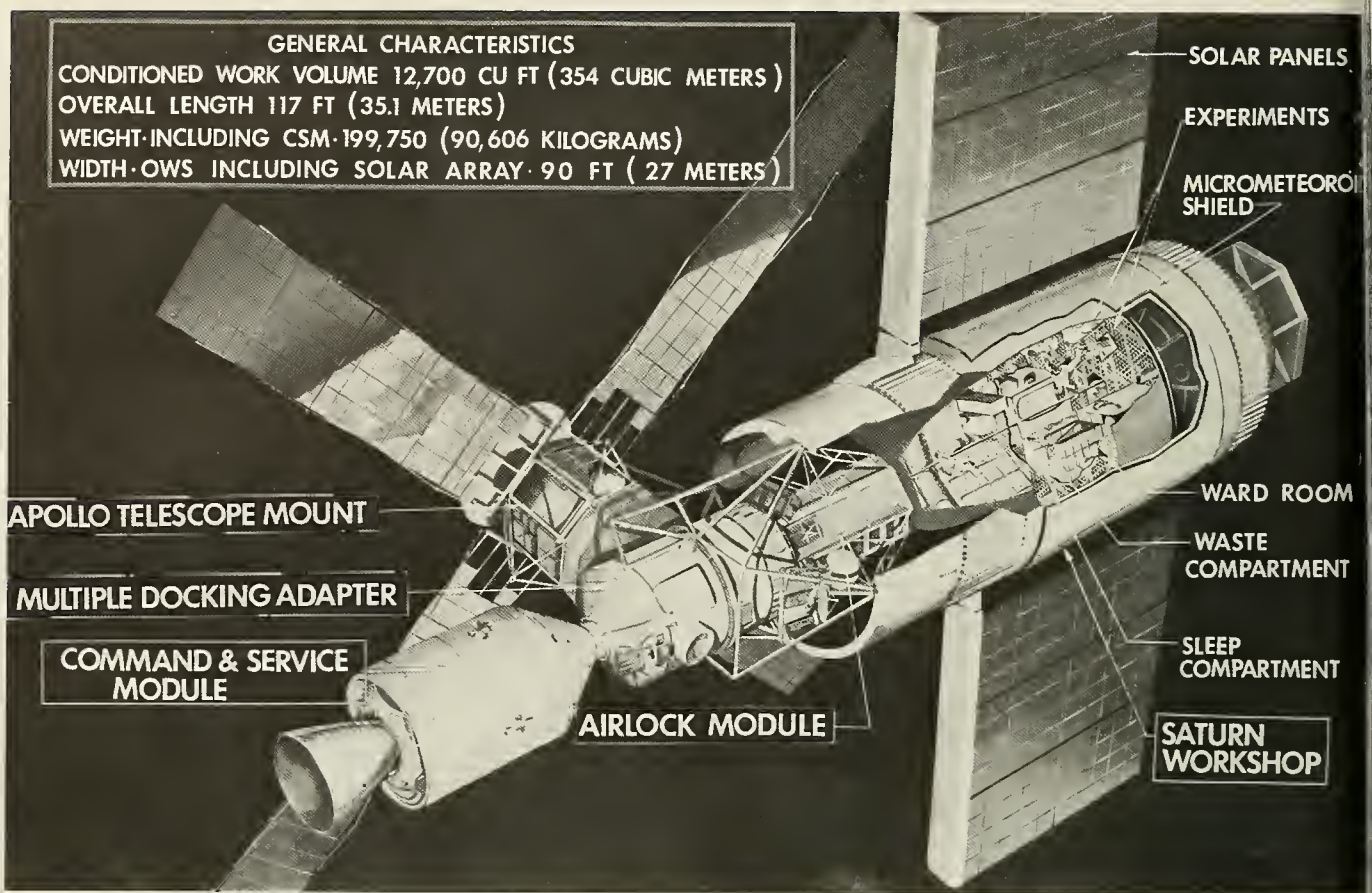
HERBERT V. LECKE, JR., currently has employment with The Parker Company, Detroit, Mich.

1937

PHILIP G. ATWOOD has retired from his duties with the New England Telephone & Telegraph Co., Boston. Formerly he was a staff engineer. . . . LAWRENCE K. BARBER has been appointed director of manufacturing at the A. C. Lawrence Leather Co., Peabody, Mass. He has been with the company since 1937 and has held a variety of responsible positions. Prior to his promotion, he was director of plant operations. . . . GORDON C. EDWARDS, the former executive director, facilities requirements and readiness department, USG, Naval Communications Command, Bailey's Crossroads, Va., is now retired. . . . ARTHUR J. LEARY has retired from Millers Falls Co., Greenfield, Mass.

1938

ROBERT M. TAFT is currently assistant general manager at the Factory Insurance Association, Hartford, Conn.



SKYLAB, Space, and Harrison Brown

HARRISON K. BROWN, '39, was not an adviser for the elegant Hollywood space epic "2001", but he might well have been. For more than a decade his life has been dedicated to the U.S. space program. His accomplishments with the National Aeronautics Space Administration, culminating in the successful flight of Apollo 11, were noted on the floor of Congress and written into the *Congressional Record* (July 17, 1969).

From 1961 until his retirement in July of 1972, Brown was with NASA's Marshall Space Flight Center, Huntsville, Ala. At Huntsville he served as systems engineering manager—Agena launch vehicles; study manager—advanced space systems; and systems engineer—space shuttle propulsion systems.

Although retired, he still takes a lively interest in what is going on or "up" in the space program. Currently he is enthusiastic about Skylab, the manned orbital scientific space station which is slated for launching in May.

Harrison Brown detailed his role in the space program in a talk to the Tech Old-Timers:

"In 1961, when NASA was starting to orbit unsophisticated satellites and only thinking about the moon and planetary missions, I joined the Agency in Huntsville which was responsible for guidance of the Atlas/Agena. Our first mission was the Ranger which crash landed an instrumentation package on the moon. The package was encased in crushable material that absorbed the shock and broke away to expose the instrumentation. The instruments were weighted to roll into a position that would point their antennae towards the earth. It took seven failures, but three successful Ranger missions provided NASA with the needed preliminary lunar surface data for a manned landing.

"The Atlas/Agena also launched the Mariner I mission, a Venus fly-by that came close enough to the planet to prove its surface was too hot for man (800°F) and its atmosphere so dense that it would crush him to death regardless of protective coating. This mission required three months of agony as the space craft developed numerous internal problems in transit all of which by some miracle, corrected themselves. One example was the light sensor that locked onto the moon instead of the earth which would have prevented data transmission from the planet. However a micrometeoroid collided with the space craft, broke the moon lock, and after a search, it correctly locked onto the earth. The worry time was increased to six months when a Mars/Mariner fly-by mission determined the planet to be desolate and practically devoid of atmosphere, but capable of manned landings similar to the moon.

"In 1963 I was given the responsibility to define a system to make practical use of the developed Apollo hardware. Since it was obvious that the moon has no practical civilian or military use because of its great distance, we concentrated on earth orbit. The system originally proposed was an orbiting workshop using the empty liquid hydrogen tank of the second stage of the small Saturn after it had burned itself into a 270 mile high orbit. The furnishings and test equipment, packaged in a box on the forward end of the vehicle, would be moved into the workshop and set up by the three astronauts who would come up on a second Saturn flight in an Apollo Command Module. Later studies proved it to be more practical to build the workshop on the ground and launch it with the large Saturn V which is used for the Apollo missions. At this point the program was named 'Skylab'.

"The Skylab workshop is built into the liquid hydrogen fuel tank of a surplus Saturn SIVb stage from which all propulsion and control systems have been removed. It is twenty-two feet in diameter and has two levels. The first level is for astronaut living and contains kitchen, dining and toilet facilities. The crew will eat earth-type food prepared aboard. They will have toilet facilities similar to those on earth and have a shower bath, both of which required ingenious design because of weightlessness. The men sleep in a vertical posi-

strapped to a slab-type bed which is best in zero gravity. They lso have an extensive exercise program to combat the "bed-n" effect of long-time weightlessness.

he second level contains most of the scientific instrumentation s the work area. Power is provided by a bank of solar cells that rt the sun's energy into electrical power. Batteries are installed ower when the Skylab is in the earth's shadow. In addition to asic workshop there is an airlock to permit excursions outside ehicle, and a docking adapter to which the Command Module the three astronauts will dock. Also attached to the cluster is TM (Apollo Telescope Module) which consists of a group of opes mounted in a common barrel that will be used for study-haracteristics of the sun.

here will be three missions on the Skylab each involving a ate crew of three astronauts. The first mission will last 28 days he other two 56 days with the Skylab shut down between ons. The first mission and launch of the Skylab cluster is scheduled oring 1973.

he first mission will stress medical aspects primarily to deter-the effect on the astronauts of that length of time in weightless-The first crew will consist of a medical doctor, an engineer, n experienced pilot.

he second mission of 56 days will also study the medical ts under a larger time of weightlessness, but will concentrate udying the sun using the ATM. Its crew will also include a medical r, a technical man, and a pilot.

"Since the Skylab will fly over 90 percent of the earth's populated areas, the third mission will concentrate on determining usefulness of space for solving earth's problems in such areas as agriculture, pollution, environmental control, weather prediction, sea state warnings, fish concentration, navigation, etc.

"In mid 1974 the Skylab will be abandoned and its orbit will gradually decay because of atmospheric impact. It will eventually reenter and burn up in the earth's atmosphere."

Brown didn't start out his career with the moon as his goal. Following graduation from WPI, he worked for Narragansett Electric Co., Providence, R.I., as a junior electrical engineer. Later he was concerned with ship design at Mare Island Naval Shipyard, Vallejo, Calif. From 1946 to 1957 he was responsible for the complete electrical system and equipment on submarines in the U.S. fleet while he was with the Navy Department, Bureau of Ships, Washington, D.C. In 1957 he joined the Army Rocket and Guided Missile Agency in Huntsville, Ala., where he was electronics engineer on the Talos and Mauler missile systems.

Brown is the son of Harrison G. Brown, '12, of Worcester. The senior Brown was fourteen years old when the Wright brothers took off in the first flimsy but successful powered airplane at Kitty Hawk, N.C., back in 1903.

His son, Harrison K., who has been instrumental in getting our astronauts to the moon and back, has just become a brand new grandfather. What celestial horizons will that grandchild be able to reach in, say, the year 2001? □

own the drain with the ace program

may not be able to find a flush toilet at a public campground on earth, but thanks to the efforts of Joseph E. Swider, '59, will be able to find one in outer space.

vider, who admits that this civilizing touch is due largely to the able participation of women in future orbiting laboratories, has loped the device under a $73,000 contract from the National nautics and Space Administration.

hen the space shuttle was given the green light, the people at AA knew the old way was outmoded, he says. Cramping two n people into a spacecraft with virtually no privacy was out of uestion. The strapped-on tubes, bags, and diapers endured by stronauts just had to go.

, for the space shuttle, which is being developed by North ican Rockwell, Swider has designed a new commode. "It will precisely controlled air currents to compensate for the lack of ty," he explains.

bit drafty," he concedes.

t according to preliminary ground tests using room-temperature eople do get used to it.

e complete system will weigh about 120 pounds, including ge for waste matter. Urine will be stored in its original form but the addition of an anti-bacterial agent. Solid waste will be e-dried to kill the germs.

e device, which looks remarkably like the first modern flush , won't appear to be much different from those installed in nes. At least five are planned for the shuttle.

e prototype was installed in a rest room at Hamilton Standard ion of United Aircraft Corporation, Windsor Locks, Conn., e Swider is headquartered.

Nobody was very eager to try it out," he confesses, "and the taries just laughed."

vider himself participated in the weightless testing phase and the opportunity of experiencing zero G, but only for a few nds.

he problem," he says, "was that the KC-135 aircraft we used only maintain the weightless state for about 30 seconds. That t give us much time for testing."

number of Air Force nurses and technicians have volunteered lp out if future tests are necessary.

ior to developing the space age toilet, Swider worked on the npack system for the Apollo program. □

Swider and his commode

1939

DR. WILLIAM L. KAY has retired as a research chemist for E. I. du Pont de Nemours & Co., Inc., Newport, Delaware. . . . ELMER C. LINDQUIST is design engineer for the King-tool Division of the Kingsbury Machine Tool Corp., Keene, N.H. . . . BURTON D. RUDNICK is an industrial real estate broker at B. Dexter Corp., Brookline, Mass. . . . LOUIS E. STRATTON has employment at Western New England College, Springfield, Mass. . . . Prof. FRED N. WEBSTER has retired from the mechanical engineering department at WPI.

1940

RAYMOND B. SHLORA is president of H. H. Brown Shoe Co., Inc., New York City.

1942

DR. FRANK T. BODURTHA, JR., holds the position of senior consultant at E. I. du Pont de Nemours & Co., Wilmington, Del.

1943

COL. PAUL G. ATKINSON, JR., has retired from his duties with the U.S. Air Force. . . . WARREN H. CHAFFEE is a self-employed investment counselor in Longwood, Fla. . . . GEORGE F. FAIRHURST has been appointed manager, product assurance, for RCA's Electromagnetic and Aviation Systems Divisions, Van Nuys, Calif. He will be responsible for the product assurance and quality control of the division's electronic warfare, drum memory systems, and aircraft communications products. Fairhurst has been with RCA since 1965. Previously he was with Litton Industries and IBM. . . . GLENNON B. HILL is a sales manager for Garlock, Inc., Palmyra, N.Y. . . . LT. COL. CHARLES A. JENKINS, JR., serves as Periodontics Chief at the USAF Regional Hospital, Davis-Monthan AFB, Arizona. . . . DR. ARTHUR E. LINDROOS is vice president of The Techni-Chem Co., Wallingford, Conn. . . . HERBERT W. MARSH serves as a senior design engineer for Offshore Power Systems, Jacksonville, Fla.

1944

NICHOLAS N. ECONOMOU, president and general manager of the Western Road Machinery Company, Salt Lake City, Utah, has been appointed to serve the rest of the year as senior vice president and treasurer of Associated Equipment Distributors. He will direct the affairs of the Association including programs designed to establish the highest standards of business operations for distributors of construction machinery. . . . DAVID M. FIELD is employed by the Vertol Division of Boeing Co., Ridley Park, Pa.

1946

WILLIAM R. GROGAN, dean of undergraduate studies at WPI, was author of the article, "New Approach to Engineering Education Is Implemented at WPI" which appeared in a recent issue of *The Chemist*. . . . GARY HOVHANESIAN has been named quality control manager at the General Electric plant in Ashland, Mass. Previously he was president and managing director of the GE housewares plant in Singapore, a timer product planning specialist at Ashland, and manager of engineering for the Housewares Division's Universal product line. . . . ALLAN E. RAYMOND is with the New York Department of Environmental Conservation.

1947

CARROL E. BURTNER is now with Naval Ship Systems Command, Washington, D.C. . . . JOHN G. HAMBOR currently serves as president of M & H Electronics, Long Branch, N.J. . . . DANIEL G. LEWIS has been named the director of a new national power survey for the Federal Power Commission, Washington, D.C. Previously he was general manager of Control Data Corporation's professional services unit in Washington and a data processing manager for General Electric in Schenectady, N.Y.

1948

G. EUGENE BOND is the president of Bond Consulting Services, Inc., Longmeadow, Mass. The service assists the business and professional community in financial areas, i.e., employee benefit plans, pensions, and estate planning. . . . ARNE A. KELLSTROM is currently general manager, tool & hoist-marketing, at Ingersoll Rand Co., East Brunswick, N.J. . . . KEL-Co Publishing Corp., East Williston, N.Y., employs ALTON S. KELSEY. . . . RICHARD N. NOBLE currently serves as senior industrial engineer at The Barden Corp., Danbury, Conn.

BENJAMIN D. RICHTER has been named vice president of Ashland (Ky.) Resources Company. In his new post he will be especially concerned with market analysis, acquisition negotiations and personnel matters. Ashland Resources, a division of Ashland Oil, Inc., has extensive interests in the highway paving and construction field, in construction materials supply and in the coal mining industry.

Prof. KENNETH E. SCOTT, who is Alden professor of mechanical engineering at WPI, has received one of the two 1972 Western Electric Fund Awards given by the New England Section of the American Society for Engineering Education. The award is given for excellence in the instruction of engineering students. . . . DANIEL H. SHEINGOLD has employment with Analog Devices, Inc., Norwood, Mass.

1949

HENRY G. MOGENSEN currently hold position with Warner & Swasey Cleveland, Ohio. . . . JOHN O. YAEGE presently employed by Fischer & Porter Warminster, Pa.

1950

RICHARD E. AMIDON was recently elec a vice president of New Hampshire Bearings, Inc., Peterborough, N.H. Form he was manager of manufacturing. joined the company in 1957. . . . WILLI COLLINGS is a chemical engineer v Ciba-Geigy Corp. . . . DAVID W. FLOO with Bovano of Cheshire. . . . DAVID HUMPHREY is a sales engineer, utilities, for Textron-Sprague Meter, Brid port, Conn. . . . DR. JOHN C. ORCUTT ser as principal development engineer Stauffer Chemical Co., Dobbs Ferry, N.Y. JOHN W. PUTNEY has been promoted assistant trust officer for Union Trust Wallingford, Conn. . . . HENRY STYSK JR., currently works as general manage Infoton, Incorporated, Burlington, Mass. PHILIP J. NYQUIST is a Peace Co volunteer in Malaysia where he is a lectu in mechanical engineering at Politek Ungku Omar Ipoh, Perak.

1951

ROBERT B. ALLEN has been elected a v president of New Hampshire Ball Bearin Inc., Peterborough, N.H. He joined the co pany in 1957 and since 1971 has be director of engineering. . . . HARVEY HOWELL is president and chief execut officer of J. L. Thomson Co. (subsidiary International Basic Economy Corp.), W tham, Mass. . . . STANLEY R. LINDBE has been promoted to superintendent forming, organic products, at Norton Co pany's Grinding Wheel Division, Worcest He was superintendent of engineerir organic products. In 1956 he joined Nort as a manufacturing control engineer organic products. . . . GEORGE K. TUCK is currently with Stanford Research Institu Menlo Park, Calif.

1952

RICHARD C. BOUTIETTE, director of t department of public works in Wakefiel Mass., since 1961, was recently elect president of the New England Public Wor Association. Presently he is serving as cha man of the technical advisory committee solid waste disposal for the Metropolit Area Planning Council. . . . KARL C. DE MER is now superintendent of engineerir for organic products in Norton Company Grinding Wheel Division, diamond a organic departments, Worcester. . . . EMA UEL J. PAPPAS is a mechanical enginee estimator specialist for General Servic Administration, Washington, D.C. . . . PA P. SPAULDING, JR., has employment wi McGrath Davis, Inc., Hartford, Conn.

We do more than gobble up dimes.

There are General Telephone operating companies in 34 states.

And even though we'll admit that has to add up to a lot of phones, we'd like to take this opportunity to remind you that General Telephone is only our first name.

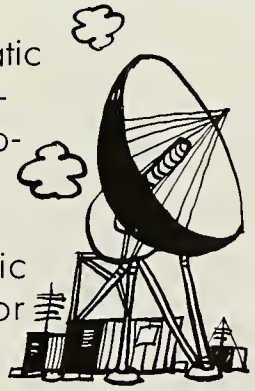
Our last name is Electronics.

And that covers a lot of ground.

It covers GTE Sylvania, which, as you probably know, manufactures everything from flashcubes, flashbulbs, and lightbulbs, to television sets and stereo systems.

But did you also know that GTE Sylvania makes hundreds of electronic components for business and industry?

It covers GTE Automatic Electric, a major manufacturer of telephone equipment in the U.S., whose products include new computerized electronic switching equipment for telephone exchanges.



And it certainly covers the people who specialize in solving the problem of easy access to computer-stored information: GTE Information Systems.

And GTE International, not only a world leader in the construction of microwave transmissions systems and satellite communications earth stations, but with manufacturing and marketing operations in 29 countries to meet the demands of home entertainment, lighting and business communications markets outside the U.S.

And GTE Lenkurt, another one of our companies that specializes in the manufacture and installation, all over the world, of microwave, multiplex, carrier, and coaxial transmission systems for video, voice, and data telecommunications.

That should give you a brief idea of what we're doing when we're not gulping down all those dimes.

And why we'd like to be known by our full name.

GTE

GENERAL TELEPHONE & ELECTRONICS

1953

JOHN E. FLYNN is currently director of operations at Plymouth Rubber Co., Canton, Mass. . . . ROBERT J. HASNERL is director-reliability and quality assurance, automotive aftermarket operations, for Bendix, South Bend, Ind. . . . KENNETH W. SHIATTE is with the New York State Department of Transportation. . . . HUBERT G. STANTON has retired as an aerospace munitions officer with the U.S. Air Force. . . . SEYMOUR M. VERSHON is director of finance and planning at a division of Tenneco Chemicals in San Francisco, Calif. . . . MICHAEL S. ZUCKER is currently with IBM in Poughkeepsie, N.Y. Recently he was elected to the Wappingers Falls (N.Y.) School Board for a five-year term.

1954

W. RICHARD BYRNES is now employed by Air Products & Chemicals, Inc., Wayne, Pa. . . . RICHARD A. FERRERO is associated with Analog Devices, Inc., Norwood, Mass. . . . KING D. KILLIN serves as principal project engineer at Kaiser Engineers, Inc., Chicago, Ill. . . . JOHN F. MALLORY, JR., is presently employed by the Town of Westfield, N.J. . . . DR. WERNER M. NEUPERT is an astrophysicist at Goddard Space Flight Center (NASA), Greenbelt, Md. . . . DEXTER E. SANFORD was the author of "Theory and Application of Ground Distance Relays," in the September issue of *Transmission and Distribution.* Currently he serves as a senior engineer in the electrical engineering department at Northeast Utilities Service Co. . . . PAUL A. WAGENKNECHT has been promoted to the newly created position of engineering superintendent at Westvaco Corporation's fine papers mill at Wickliffe, Ky. He will be responsible for the engineering services function at the pulp and paper installation including capital improvements, design, construction, installation and costs. He joined the company in April of last year. . . . R. KINGMAN WEBSTER is executive vice president of H. K. Webster Company, Lawrence, Mass.

Wagenknecht, '54

Gentsch, '58

1955

Born: To Prof. and Mrs. ROBERT J. SCHULTZ, their third child, a daughter, Georgeanne, on November 1, 1972. Prof. Schultz is in the civil engineering department at Oregon State University, Corvallis, Oregon.

WALTER B. POWER III is a senior sales engineer for McGraw-Edison Power Systems Division, Belmont, Mass.

1956

JOHN K. DERBY is assistant manager of manufacturing at Staley Chemical Division of A. E. Staley Co., Kearny, N.J. . . . JAMES L. FORAND, SIM, has retired from the Pullman Company and is residing in Kresgeville, Pa. . . . JOHN L. HYDE is regional sales manager at Singer Instrumentation, Palo Alto, Calif.

1957

Born: To Mr. and Mrs. KEITH O. PRESTON, their first child, a son, Kerrick Scott, on July 8, 1972. Keith is employed as plant manager for Owens-Corning Fiberglas Corporation in the Foam Products Division, Bloomington, Ill.

JOHN P. DENSLER serves as director of manufacturing engineering at Codex Corporation, Newton, Mass. . . . S. E. GREENFIELD is now employed by General Electric in Schenectady, N.Y.

1958

Prof. JAMES S. DEMETRY was chair of a panel on the evaluation of new inst tional methods at the 50th annual fall m ing of the New England Section of Amer Society for Engineering Education, w was held in Boston. . . . MICHAEL G. BRAITH is assistant plant manager DeSoto, Inc., Pennsauken, N.J. . . . STEWART GENTSCH has been promote operations manager of the Worcester Springfield (Mass.) plants of the R Chain Division of Rex Chainbelt, Inc. I viously he was factory manager of R Bearing Division, Downers Grove, Ill. joined the company in 1958 as a sales respondent. . . . DONALD W. ILLINGWOF is corporate insurance manager for Herc Incorporated, Wilmington, Del. . . . WALT JANAS, JR., a senior engineer for Boe Co., is located in Cheyenne, Wyo. . RONALD D. KANGAS works for the partment of Transportation, Cambrid Mass. . . . ROBERT H. MacGILLIVRA temporarily at Pilgrim Nuclear Station, Ply outh, Mass., where he serves as a ser field engineer for General Electric Co. . WILLIAM R. McLEOD is now maintena manager at Ciba-Geigy Corporation, Cr ston, R.I. . . . HARVEY M. ROBBIN is w Sherry Plumbing & Heating Co., I Hartford, Conn.

1959

JAMES A. ALFIERI, who received his M in civil engineering (structures) from Ca fornia State University at San Jose last ye is associate bridge engineer for the State California Division of Highways, Sacr mento. . . . RICHARD G. EDWARDS, w holds a professional engineering license, a regional traffic engineer for the New Yo State Department of Transportation, Horne N.Y. . . . F. WILLIAM FARNSWORTH assistant division superintendent at E. I. Pont de Nemours & Co., Parkersburg, W. V . . . RAYMOND J. TIVNAN currently serv as president of McMahon & Co., In Worcester. . . . LAWRENCE WHITE holds t position of vice president at the Leath Group, Inc., Johnstown, N.Y.

MORGAN

CONSTRUCTION COMPANY

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Serving the Ferrous and Non-Ferrous World Markets since 1888 as Engineers and Manufacturers of Rolling Mills, Morgoil Bearings, Wire Drawing Machinery and Furnace Equipment

1960

WILLIAM J. FIRLA is presently located Surrey, England. . . . LEON HUSISIAN no owns Home Improvement Specialists, E mira, N.Y. . . . HENRY G. HYDE has emplo ment as manager-property protection Stauffer Chemical Co., Westport, Conn. . DOUGLAS O. KENDRICK has been nam vice president of engineering at Incote Corp., Natick, Mass. He joined the firm manager of the engineering department 1969. Last year he was promoted to direct

When the pack comes down the chute at Indy, we'll be there in spirit. The Norton Spirit.

That's the name we've chosen for the championship race car we'll be campaigning on some of the world's toughest testing grounds... a lean, tough rolling projectile crammed to the throttle with 850 horses of double overhead cam turbo-super-charged power!

Sponsored by various divisions of Norton Company whose products are closely linked to the manufacture and fabrication of most automotive parts, this sleek racing machine will hit the U.S.A.C. championship trail from Indianapolis to Ontario, from the Pocono 500 to the Michigan 200.

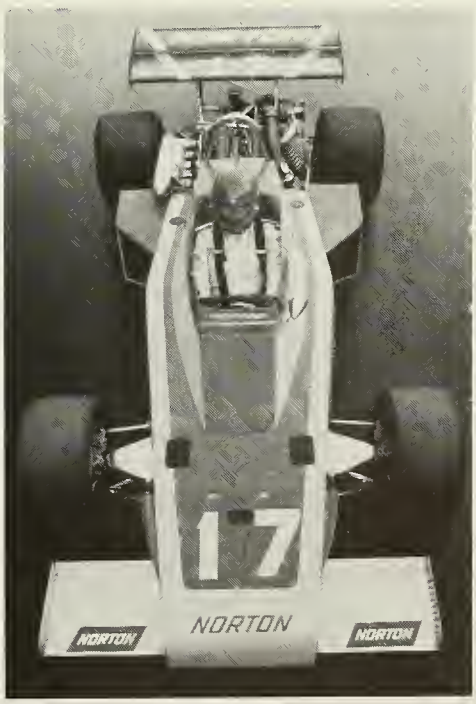
Our entry in this internationally renowned sports event underscores the important role Norton products play in the automotive industry. It also reflects the combined talents, skills and competitive spirit of Norton's 18,000 employees. It is this same spirit of endeavor and a genuine desire to excel that has made Norton the world's largest and best known manufacturer of abrasives and a prime supplier of industrial ceramics, pressure-sensitive tapes and plastics and synthetics.

Keep your eye on the new Norton Spirit... an exciting symbol of a company and people that are on the move! Norton Company; World Headquarters, Worcester, Massachusetts 01606.

Norton grinding wheels ore depended on for precision grinding ond finishing of critical engine components, tronsmission ports, drive shofts, steering geor ond front wheel suspensian parts.

Norton cooted obrosive belts, sheets ond discs ploy on importont port in grinding broke shoes, cronkshoft lopping ond in the preporotion ond finishing of oll types of metol ond fibergloss automotive ponels.

Becouse they grip curved and irregulor surfoces tightly and strip off quickly ond cleonly, Norton pressure sensitive mosking topes ore used extensively in the preporotion ond final pointing of outomotive bodies.



Norton industriol ceramics, including refractory cements, ore widely used to line melting furnaces in which outomotive engine blocks ond other components ore cost.

Norton obrasive moteriols ore selected for their long life ond increosed productivity on o voriety of outomotive production opplicotions including the deburring ond finishing of gears, corburetor ports, connecting rods, boll joints, butterfly volves and thermostots.

Norton TYGON® tubing is ideol for low pressure fuel, vent ond refueling lines where high visibility is required.

NORTON

Nobody has a better track record.

of engineering. . . . ROGER R. LaFONTAINE is general manager at Salvi Ford Sales, Cambridge, Mass. . . . ROBERT J. MERCER has become associated with Leisure Technology Corp., Lakewood, N.J. . . . HAROLD J. PIERCE is a senior test engineer for the U.S. Army Test & Evaluation Command, Aberdeen, Md. . . . NORTON S. REMMER serves as a visiting lecturer in the civil engineering department at WPI. . . . RONALD J. RICHARD is assistant professor of physics at Benedictine College, Atchison, Kansas. . . . GEORGE G. WILSON now works for Singer/Tele-Signal, Woodbury, N.Y.

1961

WILLIAM CALDER III has been appointed as technical consultant on the development and engineering staff of the Foxboro Company, Foxboro, Mass. In his new position he will be active in the company's focus on product safety for its line of industrial process controls. He joined the company in 1963 and was promoted to senior product engineer in 1969. He has been concerned with electrical codes and safety on national and international levels. He has written papers on the subject and is currently serving as a U.S. delegate on several International Electrotechnical Commission committees relative to hazardous area operations.

PHILIP M. CRIMMINS was recently appointed eastern manager of fine papers in Brown Company's Specialty Papers Division and will be headquartered at Englewood Cliffs, N.J. . . . DR. ARTHUR F. GREENE is a physicist with National Accelerator Lab., Batavia, Ill. . . . BRADLEY E. HOSMER holds the position of general manager-systems group, at Branson Sonic Power Co., Danbury, Conn. . . . VINCENT KOST is with United Illuminating Co., New Haven, Conn. . . . WARD D. MacKENZIE currently serves as European sales manager for Digital Equipment Corp. in Geneva, Switzerland. . . . NORMAND L. NOEL works for Gilbane Building Co., Providence, R.I. . . . SVEND E. PELCH is with the International Division of Bristol-Myers, New York City. . . . THOMAS E. POSTMA has been named senior project engineer at Delco Electronics, Goleta, Calif.

ROBERT W. SCHOMBER has been appointed vice president of manufacturing for Thunderbird Products Corp., Miami, Fla. For the past year he has served as director of manufacturing. Thunderbird, a Fuqua Industries subsidiary, manufactures Thunderbird and Formula boats, leading names in the boating industry. . . . KENNETH J. VIRKUS presently works as an assistant plant manager at Princeton Chemical Research, Inc., Rocky Hill, N.J. . . . ROBERT ZIMMERMAN is with Acme Viking Fire Protection Corp., New Britain, Conn.

Calder, '61

1962

RICHARD O. ALLEN is a master of radiation biology at Blair Academy, Blairstown, N.J. . . . LAURENT A. BEAUREGARD serves as assistant professor of philosophy at Reed College, Portland, Ore. . . . JAMES L. FORAND, JR., is now with the sales engineering department at Bethlehem Steel Corp., Bethlehem, Pa. . . . ROBERT A. HANSEN works for Real Time Geophysics, Norwood, Mass. . . . WILLIAM A. KREIN is manager-financial operations analysis, power generation group finance operation at General Electric Co., New York City. . . . RICHARD P. La JEUNESSE is assistant product marketing manager for General Radio Co., Concord, Mass. . . . PRABODH SHAH, who recently received his MBA from Boston University, now serves as a senior market analyst at Corning Glass Works, Corning, N.Y. . . . STEPHEN E. WINER has been appointed manager of commercial development for the Washine Division, Mallinckrodt Chemical Works, New York City. He will be responsible for the development of new products, business opportunities, custom manufacturing, and the para-aminophenol market.

1963

KURT D. ANDERSON is currently with the State of New York Atomic & Space Development Authority, Malta, N.Y. . . . RALPH D. GELLING is an attorney with Morgan, Finnegan, Durham & Pine, New York City. . . . PAUL P. HAUSNER works for International Heating & Air Conditioning Company, Utica, N.Y. . . . ROBERT E. MAYNARD, JR., serves as general manager-N.H., for R.H. White Construction Co., Inc., Merrimack, N.H. . . . ALFRED A. MOLINARI is with Analogic, Inc., Wakefield, Mass. . . . ALAN R. ROBERTS presently works at Sperry Research Center, Sudbury, Mass.

1964

Married: PAUL B. WATSON and Miss Susan B. Morton on November 18 in Cape Porpoise, Maine. Mrs. Watson is a graduate of the University of Maine, Portland.

DR. MARTIN A. BARONE is an assoc research engineer at General Motors Te nical Center, Warren, Mich. He rece received his PhD in civil engineering f the University of Illinois. . . . RICHARD BROWN is a public relations specialist w Data General Corp., Southboro, Mass. RICHARD D. CASE, JR. works as an el tronic engineer at the Naval Underwa Systems Center, New London, Conn. . ALAN R. GROSS is a management cons ant at Harmin Management. . . . Koel Mfg. Co., Marlborough, Mass., empl JOHN E. GULLIKSEN, project engineer. E. JAMES HANNA III is a self-emplo business consultant with General Busin Services, Rathdrum, Idaho. . . . DR. RICHARD LUNDGREN, JR., holds position of assistant professor in the mat matics department at Allegheny Colle Meadville, Pa. . . . THOMAS B. NEWMA JR., who is a reliability manager at R theon, Bedford, Mass., recently received MBA from Babson College. . . . MICHA P. PENTI serves as chief office engineer J. A. Jones Construction Co., Somer Mass. . . . ROBERT ROUNDS, JR., preser holds the position of district sales mana for Moog, Inc., Glen Ellyn, Ill.

1965

KENNETH B. ADRIAN serves as syste analyst at Damon Corp., Needham Heig Mass. . . . WAYNE E. EDDY is recreation sources specialist for the State of N Hampshire Department of Resources Economic Development, Concord, N.H. RONALD G. GREENE, who received MSEE from Northeastern University year, is a senior member of the technical s at RCA Aerospace Systems Division, B lington, Mass. . . . IBM Electronic Syste Center, Owego, N.Y., employs DONALD GREGOIRE as a development engine manager. . . . WILLIAM R. HOPKINS currently with Stone & Webster. . . . DAV B. LUBER is on the technical staff at E Telephone Lab., Murray Hill, N.J. . WAYNE D. PONIK currently has empl ment with Teradyne, Inc., Sunnyvale, Ca . . . FRANK RAINER and his wife, Sigrid, taking a 12-month trip around the wo Frank writes that they recently spotted WPI sticker on a car outside of the Emer Buddha Temple in Bangkok, Thailand, . RICHARD E. RICE is studying at the U versity of Montana. . . . ERIC W. ZINK h joined Environmental Sciences Associat Inc. (ESA), Burlington, Mass., as chemi applications engineer. He will be responsib for developing advanced methodology detecting and measuring trace metals blood, soil, air, water, and other matric He is presently completing requirements his PhD at the University of Massachuset Amherst.

66

ied: PAUL R. MALNATI and Miss Mary Gettinger of Mount Holly, N.J., on ember 23, 1972. STEVEN J. ERHARD, was best man. Ushers were ELLIOT F. PPLE, '67 and GEORGE H. RAND, '67. ati presently serves as a senior project neer with Applied Information Industries, restown, N.J.

RIAN N. BELANGER is electrical design neer at Norden Division of United Air- Norwalk, Conn. . . . WILLIAM N. TLEY, who received his MEd from e (N.H.) State College in 1972, is a ce teacher in Gorham, N.H. . . . CAPT. ENE R. DIONNE has received his second d of the U.S. Air Force Commendation al at Los Angeles AFS, Calif. He was for his meritorious service as an arma- systems engineer at Wright-Patterson Ohio. Currently he is serving in Los les as a development engineer with the e and Missile Systems Organization. GEORGE M. ELKO now works for the York Telephone Co., New York City. Dr. RONALD D. FINN has accepted a ion as associate chemist with the ics department of Brookhaven National ratory. . . . RICHARD E. GOODELL is t engineer for Pfizer, Inc., Adams, Mass. DR. MALCOLM A. MacGREGOR is an tant professor at Massachusetts Mari- Academy. . . . RICHARD B. NELSON, is presently an independent oil and gas ucer in Oklahoma City, has been named rector of Superior Electric Co., Bristol, n. . . . DONALD R. NITSCHE's employer ravelers Insurance Co., Hartford, Conn. CHARLES W. PIKE is a student at the ol of Forestry & Conservation, Univer- of California at Berkeley. . . . Senior nical adviser at the Environmental Pro- on Agency, Washington, D.C., is RGE R. STEVENS.

967

n: To Mr. and Mrs. JOHN E. SONNE, a Ethan Leben, on September 21, 1972. n has been a student at the School of erinary Medicine, University of Pennsyl- ia.

ICHARD H. COURT, JR., is an analytical mist at Ciba-Geigy Corp., Ardsley, N.Y. Systems analyst for Millipore Corpora- , Bedford, Mass., is ROBERT J. DASH- R. . . . JOHN FIORE, JR., works at Gibbs Hill, Inc., New York City. . . . MICHAEL FLOOD teaches at Aurora (Ohio) High hool. . . . LAWRENCE R. GOOCH works the New York District, Corps of Engi- ers, Northern New Jersey Field Office. . . . TER M. HERRON is with Hughes Air- ft Co., and is currently residing in Denver, lo. . . . WALTER A. JOHNSON, JR., has ployment as a senior programmer at IBM, vego, N.Y. . . . MARSHALL KAPLAN is f-employed as stores manager at Clinton ess Shop, Clinton, Mass. . . . JOHN B. ANO, JR., received his MBA from North- stern University last year. Presently he is chnical superintendent in the Dewey & my Chemical Division of W. R. Grace &

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Dionne, '66

Co., Chicago. . . . JOHN E. ROGOZENSKI, JR., works as operations research analyst at U.S. Army Natick (Mass.) Laboratories. . . . Union Carbide Corp., Bound Brook, N.J. employs KENNETH G. SCHURZKY, development engineer. . . . CHARLES J. SISITSKY is planning director for the City of Medford, Mass. . . . HARRY E. TAYLOR is a student at Harvard Business School. . . . Vail Associates, Inc., Vail, Colo., employs JAMES L. VIELE as a real estate engineer. . . . GARY K. WILLIS has been named manager of Bailey Meter Company's Boston District sales office. He joined the company in 1967 and has held a number of sales positions. He ran unopposed for school committeeman in Mansfield, Mass., last year.

1968

Married: ALAN R. BERG to Miss Kathleen A. Navickas on November 19, 1972 in Worcester. Among the ushers were EDWARD McNAMARA and STANLEY PIETREWICZ, JR. Mrs. Berg is a teacher. Her husband is a graduate student at WPI. . . . KENNETH A. GMINSKI to Miss Ruthanne Hazelton in Medford, Massachusetts on October 21, 1972. ARNOLD J. ANTAK was an usher. The bride is secretary to the principal of Stoneham Junior High School. The groom is a loss prevention field engineer for Factory Mutual Engineering in Norwood.

. . . LOUIS MANONI to Miss Joan Scalise on October 8 in North Loudonville, N.Y. Mrs. Manoni is a medical secretary. Manoni is a mathematician for the Defense Communications Agency at the Pentagon, Washington, D.C. . . . DOUGLAS A. MURRAY to Miss Donna Lee Hughes on October 1, 1972 in Millbury, Massachusetts. The bride is a graduate of Northeast Essex Community College. The groom is an electrical engineer with Raytheon Co., North Andover, Mass. . . . WILLIAM R. O'NEIL to Miss Charlotte A. Cooper in Ft. Belvoir, Virginia on November 18. CARL STEELE was an usher. Mrs. O'Neil is a graduate of Oklahoma State University. Mr. O'Neil is employed by the U.S. Department of Commerce as a geophysicist. He is chief of the Barrow Observatory in Alaska. . . . RICHARD F. SIMONEAU and Miss Kathleen E. McNamara on October 7, 1972 in Bristol, Connecticut. GEOFFREY HARTUNG was best man and WALTER SACKMANN was an usher. The bride is a registered nurse. The groom is working toward his MBA at RPI.

JOSEPH S. ADAMIK, JR., is now employed by Westinghouse Electric Corp., Richmond, Va. . . . DAVID E. ANDERSEN works as a technical representative for E. I. du Pont de Nemours & Co., Inc. . . . ROBERT E. ANDERSON currently has employment with Southern New England Telephone, New Haven, Conn. . . . ARNOLD J. ANTAK is a water resources planner at Howard, Needles, Tammen & Bergendoff, Boston. . . . WILLIAM R. BELISLE has received his MS in mechanical engineering from California State University at Long Beach. He has been associated with Garrett Corp., Torrance, as a development engineer in aerospace systems, since his release from the Army. . . . STEPHEN J. BRODEUR currently serves with NASA at Goddard Space Center, Greenbelt, Md. . . . FRANK T. CHECK, JR., is with Pitney Bowes, Inc., Stamford, Conn. . . . GEORGE DAVAGIAN, JR., has employment with Sutton Corp., Belmont, Mass. . . . JOHN P. DUBIEL is with Boston Edison Co., Boston. . . . ROBERT J. GALLO has been discharged as a captain from the Army and is now employed by the Connecticut Department of Transportation, Wethersfield, Conn. . . . Ace-Lon Cellophane Products Co. of Malden, Mass., employs HARRY T. GENTILE

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roduction manager. . . . RONALD F. SZEWSKI has been employed by CNA ial Corp., Chicago. . . . DAVID H. is a product design engineer for Operations, Ford Motor Co., Dear- Mich. . . . RICHARD W. HEDGE was ly promoted to Coast Guard Lieuten- junior grade) at the Coast Guard in New Orleans. He is a shipyard plans tor. . . . JEFFREY J. HULTMAN is a er of the technical staff at Hughes ft Company, Culver City, Calif. . . . N. KEELER works for Digital Equip- Corporation, Meriden, Conn. . . . JOHN RZICK is with Cincinnati Milacron, Valley, Minn. . . . JAMES M. PERKINS as an analyst-methods of equipment pment, Carboloy Systems, General c, Detroit, Mich. . . . ROGER W. R received his PhD in physics from State in December. He will assume sition of member of the technical staff l Laboratories in the near future. . . . COLM B. WITTENBERG received his egree from George Washington Uni- Law School last year. He is a member Virginia Bar Association and plans to practicing law next June. Currently he h the U.S. Patent Office in Arlington,

69

To Mr. and Mrs. THOMAS M. ZDAUSKAS a son, Michael Joseph, on 5, 1972. Tom writes that he is in his position as a chemical engineer for le Oil & Refining Co. at their Bayway refinery. . . . To Mr. and Mrs. DUNCAN OMIS a daughter, Jennifer Ann, on mber 10, 1972.

JG BRUCE L. CARLSON is serving the U.S. Navy in the Pacific. . . . ARD W. DeLAND is a machinist mate nuclear) in the Navy on the USS Bain- e, San Francisco, Calif. . . . DR. EMAN- F. FURST has the position of assistant ssor of electrical engineering and bio- cal engineering at University Hospital, rsity of Arizona, Tucson. . . . MARK S. ER serves as a graduate research asso- at Ohio State University, Columbus. . . . NLEY J. GOLDMAN is an academic ant at the University of Texas in Austin. CHARD H. GURSKE works as a project neer-solid waste, VTN Corp., Engineers chitects, Bellevue, Wash. . . . JAMES ILLS is a product design engineer at ester Controls Corp., West Boylston,

valuation of Four Semesters' Experience IPI Course in Control Engineering," a r prepared by STEVEN A. HUNTER, Dr. ERT A. PEURA, '64 and Prof. KENNETH OTT, '48, was discussed in the October of *Engineering Education*. Hunter is a uate teaching assistant in the WPI anical engineering department, where also teaches. Dr. Peura is assistant ssor in the electrical engineering and sciences departments at WPI. . . . HUR T. KATSAROS is a development neer at Union Carbide Corp., Tarrytown, . . . LAWRENCE KATZMAN works as a senior engineer at Walden Research Corp., Cambridge, Mass. . . . DAVID A. KUNIHOLM, JR., has taken a leave of absence from his position with New England Telephone & Telegraph Co. and is traveling extensively through Europe. . . . GARY L. LEVENTHAL is a graduate student at Northeastern University, Boston. . . . HENRY E. McGUIRE received his MS in environmental engineering from Loyola University in Los Angeles last June. Currently he is enrolled as a PhD student in environmental engineering at Vanderbilt University, Nashville, Tenn. He was previously with the City of Los Angeles as an environmental engineer. . . . ROGER W. MILES has been named director of the Memorial Press in Plymouth, Mass. Since joining the Press six months ago he has introduced a 4½-day work week and has physically streamlined production in the interest of greater efficiency. . . . RICHARD H. PALM is a software specialist for Digital Equipment Corporation, Syracuse, N.Y. . . . RAMESHBHAI N. PATEL is employed by Advanced Digital Systems, Inc., Mohawk, N.Y. . . . CHARLES E. TRENT serves as a dye stuff supervisor for Inmont Corp., Hawthorne, N.J.

1970

Married: ALAN J. NIZAMOFF to Miss Diana Rea on August 26, 1972 in Orange, New Jersey. The bride is a senior at Newark State College where she is majoring in elementary education. Her husband is a project engineer with Esso Research & Engineering, Florham Park, N.J. . . . ROBERT J. SWITZER to Miss Marilyn C. O'Brien on October 21, 1972 in Weymouth, Massachusetts. GEORGE HOMME, '71 was an usher. Mrs. Switzer is an administrative assistant at Cabot Corp., Billerica. The groom is a computer programmer for Morton Shoe Co., Boston.

BRADFORD L. BJORKLUND is a technical service engineer at Universal Oil Products Co., Riverside, Ill. . . . GARRETH J. COOKE is a research assistant at WPI. . . . KENNETH G. CRAM currently serves as an experimental engineer for Pratt & Whitney Aircraft, East Hartford, Conn. . . . DAVID B. DAMER is assistant mechanical engineer at United Illuminating Co., New Haven, Conn. . . . BERNARD J. DODGE has been working as an assistant in the projects office at WPI. . . . DAVID A. FAGUNDUS, associate engineer, works at New England Telephone, Boston. . . . ROGER P. HENZE is a planner at C. E. Maguire, Inc., Wethersfield, Conn. . . . JOHN S. KEENAN works for the Connecticut Light and Power Co. . . . 2/LT. FRANK B. POPE, JR., recently completed a field artillery officer basic course at the Army Field Artillery School, Ft. Sill, Okla. . . . ALAN S. PRUCNAL has been promoted to first lieutenant in the U.S. Army. He is a staff member on the Merrimack River Wastewater Study, New England Division Corps of Engineers, Waltham, Mass. Presently he is working towards his MS in Sanitary Engineering at Northeastern University. . . . ERIK M. ROY, who received his MS in industrial administration from Union College, Schenectady, N.Y., last year, is now a staff industrial engineer at Mohasco Industries, Inc., Amsterdam, N.Y. . . . JEFFREY H. THURSTON is a second lieutenant in the U.S. Army.

Prucnal, '70

1971

Married: JOHN A. GIORDANO to Miss Cynthia A. Kuklierus on October 14, 1972 in North Grafton, Massachusetts. Mrs. Giordano is a certified operating room technician at St. Vincent Hospital, Worcester. Her husband is working for his MBA at the University of Rhode Island, Kingston. . . . WILLIAM J. MULVEY and Miss Debra J. Yoxall on October 21 in South Glastonbury, Connecticut. URMAS E. VOLKE and RALPH H. REDDICK were ushers. Mrs. Mulvey attended Manchester Community College. The bridegroom is a design engineer at Sikorsky Aircraft, Stratford. . . . LT. KENNETH R. PERKINS to Miss Yvonne M. LaMothe on October 7, 1972 in Modesto, California. The bride, a teacher, has a master's degree from Stanford University. The groom is in the signal corps at Ft. Bragg, N.C. . . . RICHARD S. PIETRYKA to Miss Paula J. Kusha on November 11, 1972 in Palmer, Massachusetts. The bridegroom is employed at Westinghouse International in New York City. . . . DONALD P. St. MARIE to Miss Linda J. Schmidt on September 17 in Putnam, Connecticut. FRANK STEINER was best man. Mrs. St. Marie is a junior at WPI. Her husband is a graduate assistant in the WPI civil engineering department. . . . MARK F. St. PIERRE to Miss Christine G. Esten on September 30, 1972 in Hartford, Connecticut. The bride attended Becker Junior College. Her husband is a designer at Riley Stoker Corp., Worcester. . . . PAUL R. SMITH to Miss Ann Clarizia on November 25 in Waterbury, Connecticut. The bride is a graduate of Grahm Junior College, Boston.

ROBERT J. ALLARD, JR., is a market research analyst (real estate) for Zayre Corp., Natick, Mass. . . . BARRY F. BELANGER is doing graduate work at the University of Michigan, Ann Arbor. . . . ROBERT C. BLAISDELL works for New England Power Co., Westboro, Mass. . . . STEVEN S. CHAN has employment at Alden Research Laboratories, Holden, Mass. . . . PHILIP M. JOHNSON is a chemist with Gentex Corp., Simpson, Pa. . . . EDWARD C. LOWE III is with General Electric Co., Schenectady, N.Y. . . . THOMAS F. MIRARCHI studies as a graduate student at Rensselaer Polytechnic Institute of Connecticut in Hartford. . . . R. ANDREW MUIR, JR., presently has employment with Donald J. Seifert, Inc., Kansas City, Mo. . . . AMRIK S. PABLEY is self-employed at India Trading Company,

Chicago, Ill. . . . PAUL J. PAKUS, an ensign in the U.S. Navy, is stationed at Coronado, Calif. . . . JOHN G. PLONSKY is an AD&D engineer at Sikorsky Aircraft, Stratford, Conn. . . . ROBERT SHEIMAN is stationed with the Army in Germany. . . . ROBERT SLAVIN works as a radio announcer at station WBCN, Boston. . . . FRANK W. STEINER is a graduate assistant at Alden Research Labs. . . . JOSEPH A. THOMAS holds the position of project engineer at Westinghouse Heat Transfer Division, Lester, Pa. . . . BRUCE R. TOMPKINS serves as a construction engineer for the Massachusetts State Bureau of Building Construction at the construction site of Mt. Wachusett Community College, Gardner. . . . LT. THOMAS J. WERB is presently assigned as a communications platoon leader and communications officer at Ft. Carson, Colo.

1972

Married: JOSEPH D. BIANCA to Miss Mary I. Jones on October 14, 1972 in Feeding Hills, Massachusetts. DAVID L. LeBLANC was best man. The bride is a Becker graduate. The groom is employed in the research and development department of Combustion Engineering, Windsor, Conn. . . . RAYMOND E. CANNING and Miss Catherine Daly on September 30, in Waterbury, Connecticut. WILLIAM KLEIN was best man and MICHAEL CORBY was an usher. The bride graduated from Anna Maria College, Paxton, Mass. . . . FRANCIS B. COSTA to Miss Gail A. Goraj of Chicopee, Massachusetts on August 26, 1972. DUNCAN CREASER and DAVID MARTIN were ushers. Mrs. Costa attended Bridgewater State College. Her husband is doing graduate work at the University of Miami in Florida. . . . LT. ANDREW J. GLAZIER to Miss Janet L. Bunten on September 1, 1972 in Woodbridge, Virginia. Mrs. Glazier is a graduate of McConnell Airline School in Minnesota. Her husband is in Georgia at Airborne School. After completion of his studies the couple will reside in Germany for two years where Lt. Glazier will be stationed. . . . RICHARD S. PODOLNY to Miss Susan Lee Dawson on October 1 in Rockport, Massachusetts. BRUCE HALL was an usher. Mrs. Podolny was a junior at WPI. Her husband is employed at the Brewster Inn. . . . ROBERT E. ROGERS to Miss Deborah L. Dunton on September 30, 1972. JOSEPH BIANCA and PATRICK LAFAYETTE were ushers. Rogers is a design engineer at Pratt Whitney Aircraft, East Hartford, Conn. . . . IRA H. WEISSMAN and Miss Alison R. Swartz on October 14, 1972 in Worcester. Mrs. Weissman is a graduate of Chandler School for Women, Boston.

Dion, '72

The groom is a programmer at D Observatory, Albany, N.Y.

MICHAEL CORBY is a system prograr at State Mutual Life Insurance Co., Wo ter. . . . PETER E. DAUPERN is a gra student at WPI. . . . Army Private AL DION recently completed eight wee basic training at Ft. Leonard Wood, M received instruction in drill and ceremc weapons, and combat tactics. Present is on active duty for the National Guar JOHN D. FOLEY is a structural engine General Dynamics-Electric Boat, Gr Conn. . . . TERRY A. FULLER is a part- instructor in the life sciences departme WPI. . . . GEORGE S. KACZOWKA wor a graduate research assistant at W Alden Labs. . . . GEORGE KARAPETIA with Stone & Webster Engineering, Boston. . . . ROBERT J. LEDUC work Westinghouse Electric Corp., Pittsburgh . . . JOHN A. MINASIAN is manager of cation, research, and development ser at the Worcester Area College Comput Center, located in Gordon Library at WP 2/LT. DONALD A. TAFT is with the C of Engineers, U.S. Army. He was rec assigned to the Army Engineer School Belvoir, Va. . . . 2/LT. GLENN A. Y recently completed a nine-week trans tation officer basic course at the A Transportation School, Ft. Eustis, Va.

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Chapter Listing Errors

The October 1972 issue of the *WPI Journal* does not contain the correct list of officers for 1972-73 for the Northern New Jersey Chapter.

The correct list of officers is as follows:

President: V. E. Kohman, '43, 32 Summit Road, Verona, N.J. 07044

1st Vice President: H. W. Tenney, Jr., '56, 74 Golf Street, West Long Branch, N.J. 07764

2nd Vice President: G. C. Anderson, '44, 71 Sycamore Avenue, Berkeley Heights, N.J. 07922

Secretary: J. H. Lauterback, '66, 1022 Helene Place, Raritan, N.J. 08869

Treasurer: J. E. Anderson, '71, 924 Kearney Drive, North Brunswick, N.J. 08902

Council: N. J. Taupeka, '58, 32 Surrey Lane, Eatontown, N.J. 07724; J. L. Reid, '51, 31 Spring Garden Drive, Madison, N.J. 07940.

John H. Lauterback, '66

Genetic Engineering Revisited

There was some blank space in the October issue, in the Feedback section, and that was due to my procrastination in writing about the most excellent series of articles in the August issue. In particular, the manner of presentation was particularly effective, and represented real perspective on the progress and the training of the advances now being made and the inevitability of the change. It will challenge all our thinking to cope with this advance in "revelation."

Perhaps you are not planning another version of this in another year or two (or whatever rate things are changing significantly today and tomorrow), but it will be absolutely a fascinating and important item to help those of us following the progress to get such a comprehensive update in something like "Genetic Engineering Revisited."

George M. Dewire, '49

How about "Son of Genetic Engineering"? —Ed.

The New Look

Although some of you may not have noticed any difference at all, the Journal's layout has been completely revised with this issue. Type styles and sizes are unchanged, but the column widths and margins have been increased slightly to correct some problems both visual and technical that had appeared in the old format—which, like Topsy, "jest grew."

The new layout consolidates available white space more, providing relief for the eye, and helps make the placement of photographs and other illustrations more appealing.

The standing departmental headlines have been redesigned to complement each other better. The numerals for classes in "Your Class and Others" have been enlarged and set in a different type style, to make a more pleasing and readable page. The contents page has been extensively revamped to make it a more attractive and fitting introduction to the magazine.

The Journal logotype has also been redesigned. Of the new nameplate its designer, Lee Rand of Princeton, Massachusetts, says: "What our eyes expect to see conflicts with the design, creating an illusion of sorts. The close-cropped background tempts us to try and 'read' the dark areas as letters, but, when we read the white space, JOURNAL appears. Imagination provides the missing top and bottom of each letter. Look at it a while and the white letters appear to float in front of the dark background. The lettering is a mix of capital and lower-case letters known as 'biform.'"

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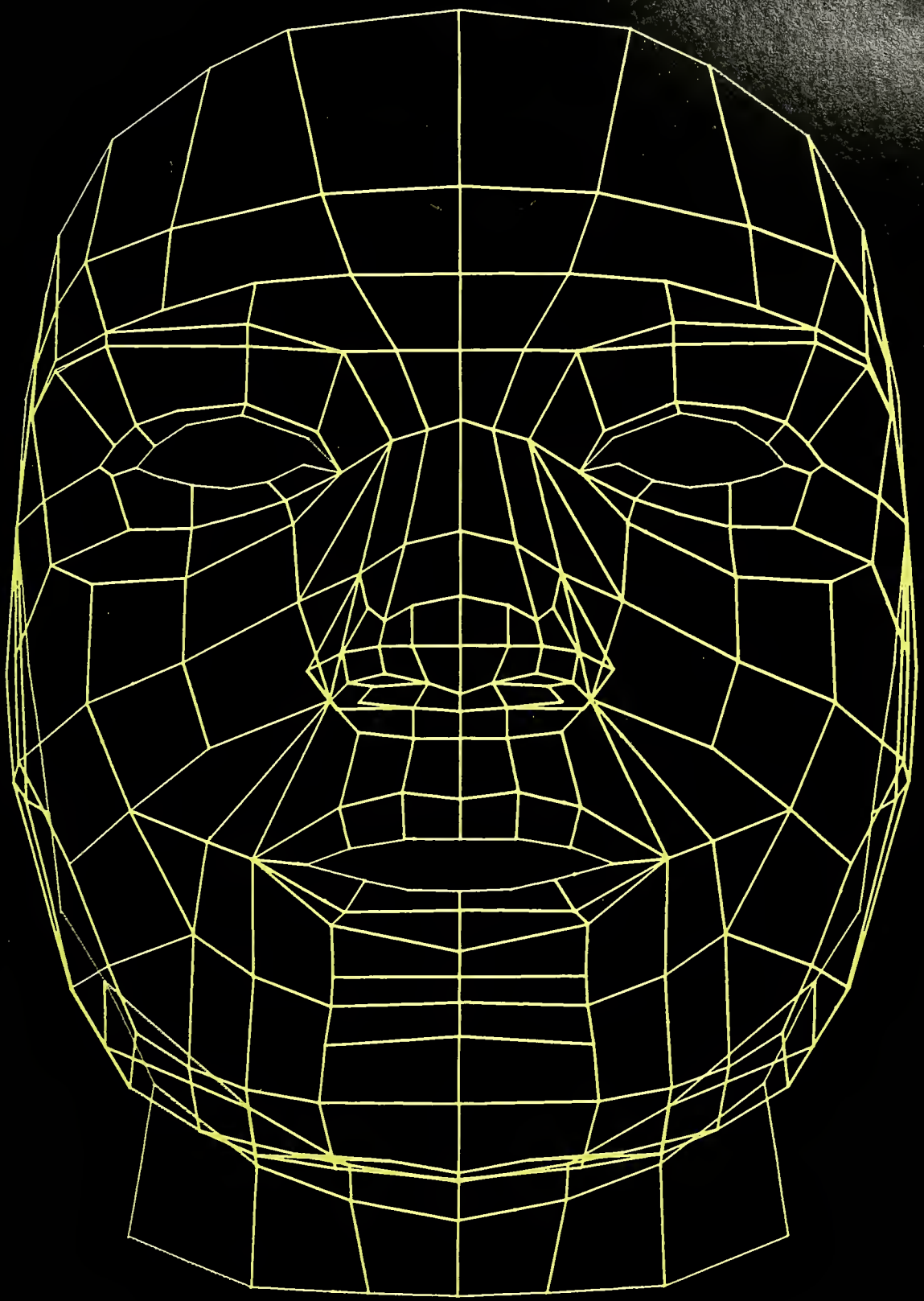
76, No. 6

WPI JOURNAL



WPI JOURNAL
Vol. 76, No. 6 April, 1973

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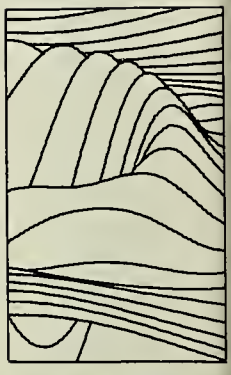

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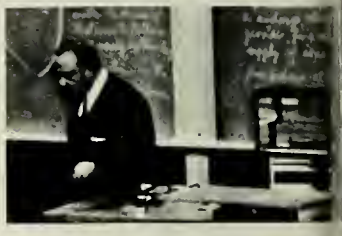

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efore and After

IE STUDENT-ALUMNI RELATIONSHIP

WPI Community embraces several groups, including
nts, faculty, and administration. There is another, equally
rtant group, namely alumni, which is an integral part of
total community. Since most alumni are not on campus as
h as the others, they are frequently overlooked by
ents and innocently forgotten as a part of WPI.

Students usually find it difficult to relate to the fact that
eday they are going to be alumni of WPI themselves.
most in the minds of undergraduates are the thoughts of
uating, of finding some form of placement and beginning
r new endeavors, but few thoughts are directed towards
relationship to or contact with WPI once they graduate.
after being away from the Hill for a while do recent
uates start to think of their roles as alumni. But this is
y too late. Students should be aware of alumni, and the
that they will someday join the Alumni Association, while
are still undergraduates on campus. The attitudes of
y older alumni towards WPI are developed during their
ergraduate years. It is therefore extremely important that
proper knowledge and attitudes between the school and
nni be inculcated while students are still on campus.

In addition to undergraduates being aware of alumni,
nni must also be aware of students, of new campus trends,
of current college life. Students and alumni should have a
d mutual understanding, generally referred to as "Student
lumni Relations."

The big question both students and alumni might be asking
Why should we care?" But for just a minute let's think of
school as a manufacturer, the students as raw materials,
the alumni as the finished products. As in business, all
ee elements must be of high quality and must interact with
h other to be successful. Returning, then, to the school,
v can students, alumni, faculty, and administration best
eract for maximum mutual benefit?

Alumni help to determine school policy, as alumni term
mbers of the Board of Trustees. The Alumni Association
all alumni give both financial and non-financial support to
I, without which it would be extremely difficult for the
lege to operate.

Alumni, in turn, benefit through good fellowship and,
en needed, second careers placement. Alumni can be
rumental in organizing projects with their companies for
dents on the WPI Plan. They can also give guidance to
-hunting seniors.

Several new programs to further student – alumni re-
ons are in either the planning or implementing stages. A
klet is being prepared for undergraduates which will
cribe the basic purpose, organization and function of the
Alumni Association. This will help to make the undergraduates more knowledgeable and perhaps better alumni. An alumni counseling program is in the organizational stages and will list those alumni who are willing to give help to students in particular areas, whether academic or non-academic. For example, one category might be student activities. There would be a list of alumni who were active as students in campus activities and who could be consulted by students currently involved. Another category might be career counseling in, say, sales engineering etc. A student who aspires to a career in sales could ask an alumnus active in the field what life is really like. To build these files, we will need alumni who are willing to be contacted by students. Another program is an already existing alumni column in the Tech News where alumni can write articles, students can interview alumni, and articles can be published informing students of current happenings with the Alumni Association. These are but a few of the programs now under consideration, implementation, or operation. But we need more.

Ideas and programs are fine but support and action are what is really needed to further student – alumni relations. In order to develop good future alumni, students must be informed while still on campus as to the concepts of the Alumni Association. Much interaction is needed between alumni and students to bridge any possible (oh, the old expression!) generation gap. The more communication, the better the understanding, and it will hopefully benefit the entire WPI community.

Leonard Polizzotto '70
Chairman, Student-Alumni Relations Committee
WPI Alumni Association

by Kenneth E. Scott, '48
and Russell Kay

LEARNING

Courses and classwork just ain't what they used to be. To be sure, there are still lectures in big halls, and laboratories too, but a revolution is sweeping the classrooms at WPI.

A Carnegie Corporation study called it "The Fourth Revolution: Instructional Technology in Higher Education." The *Simmons Review* put it better: "The lamp of learning is wired for sight and sound."

In the past three years at WPI, instructional procedures have undergone some drastic modifications and alterations, starting from the traditional classroom lecture and fixed laboratory programs and adding in increasing amounts of modern technology.

It may seem a bit strange that a college geared to education *for* technology should wait until the 1970s to really begin education *using* technology. This timing is probably due to two factors. First was the renewal of the college with the adoption and implementation of the WPI Plan. Rethinking the basic structure of education for a technologically based world inevitably led to a reexamination of teaching methods and procedures. New demands on faculty and students alike led to a search for ever more efficient ways of using available time, people, and other resources.

The second reason that new instructional technology hit so hard at this time was that the technology itself for effecting the changes was ready — it was available, affordable, and its possibilities were just beginning to be realized across the country.

Where Have All the Slide Rules Gone?

It used to be a campus cliché, especially at large universities, that you could always tell an engineering student by the leather slide-rule holster dangling from his belt. While that is probably still true right now, in a few years the slide rule may become a collectors' item. The reason, of course, is the pocket-sized electronic calculator. It is faster, more accurate, easier to use, it remembers decimal points — and it costs more. But not all that much more, and the prices keep coming down.

Mechanical Engineering Department Head Donald Zwiep is working on a program (still in the planning stages) that would make one of these "electronic slide rules" available to each entering student (beginning next fall) for an annual fee of perhaps $25 — and on graduation the total rental the student has paid will be applicable to the purchase of the instru
Right now, calculators are available for general use a
Gordon Library, and WPI Bookstore manager Harry Th
son says he plans to carry calculators in stock immediatel

The Coming of the Computer

Someone recently made the statement that in five ye
knowledge of computer programming would be as basic a
to the average student as typing is today. A lot of publicit
been given in the last year to Dartmouth College's large
computer center and the fact that it is widely used b
facets of their student body. Well, perhaps that is unusu
Dartmouth. At WPI there have been time-sharing terminal
computer time available to students since 1969, a
student's ability to use the computer is taken for granted.

Those original time-sharing capabilities were embodi
the RCA (now Univac) Spectra 70/46, which was
primarily for batch processing. At that time the avai
terminals were located in WACCC (the Worcester Area Co
Computation Center) itself. Temporary hookups were
made that allowed terminals to be placed in Salis
Laboratories and Kaven Hall, but these have since
superseded by a permanent underground communicat
network installed last summer.

In January of 1972 a new computer, the DEC sy
10-50, was installed for exclusive time-sharing use. As of
writing there are sixteen hardwired computer terminals a
able on campus at five different locations, including one w
is open twenty-four hours a day. In addition to these, there
many other terminals on campus which tie in by acous
coupler and telephone. The DEC 10 has a capability
handling 48 terminals, and to make better use of the comp
several other area colleges are also tied in.

To help his students become accustomed to using
computer, Professor A. F. Chalabi of the civil enginee
department regularly uses a terminal during class time for
courses in "Matrix Computer Analysis of Structures"
"Design of Reinforced Concrete Structural Systems." He pl
to expand this type of use. To be sure, there is some dange
this because students have been known to rely on

neth E. Scott, '48, is professor of panical engineering, Institute tor of audiovisual development, George I. Alden professor of neering. Russell Kay is Director of lications.

puter to solve problems that would be better — and faster ndled with a few minutes at a small calculator.

Training in the use of the computer is aided by several taped programs, which teach operation of certain ancil- equipment and aspects of some of the commonly used puter languages.

eo, Stage One

single biggest factor in the learning revolution at WPI has television — videotaped, closed-circuit, cable-connected, up-access. Video on campus is used extremely widely — for entertainment, not for training future broadcasters,

now to each now to earn

for solid instruction in just about every field of study WPI ers.

The beginnings of television at WPI were told in the spring '1 *WPI Journal*, in "The Education of the Idiot Box." At t time there was a rudimentary video studio, and a few ulty members were exploring the possible pedagogical uses the medium. There was one viewing station available to dents in the library.

Television use and Individually Prescribed Instruction (IPI, box) developed side by side here. In order to be successful, reat deal of planning and preparation must go into the velopment of an IPI course, and this normally includes the paration of videotapes. Dr. Harit Majmudar of the electrical engineering department pioneered the use of videotapes to support work in a power engineering course. Although it was not considered an IPI course at the time, it had many of the earmarks of the IPI approach.

One of the earliest IPI courses, one which brought about perhaps the biggest changes, was in the area of control engineering. For several years various faculty members had considered giving a single, cross-discipline course sequence in control engineering, but this never came to pass for the usual variety of reasons. With the emergence of IPI, however, and with the incentive for innovation which the WPI Plan created, the usual objections were now overturned and a cross-disciplinary IPI course was instituted.

This course placed heavy reliance on multimedia instructional aids. The most useful and valuable instructional tool proved to be videotape. Although some tapes were prepared in advance to present certain types of material, the instructors of the course found an unexpected student demand for many more short videotapes. Students wanted tapes to clarify points, explain principles, or just to detail a shortcut approach. Because of this, two distinct types of viewing stations were needed. There were those in the library for general use, and there were specific stations in the laboratory, adjacent to such equipment as the analog computer and servo kits.

Video, Stage Two

During that spring 1971 semester, there was one viewing station in the library. Only a few courses were being offered using IPI, and these involved perhaps 200 students. At that time the use of video was still considered experimental.

More courses were planned for IPI, and during the summer of 1971 many more videotapes were produced. In May 1971, Professor Kenneth Scott of the mechanical engineering department was appointed half-time to administer and direct the Institute's development of audiovisual resources. In July of that year Herman Dumas, an electronics technician, was hired to supervise the studio, maintain the equipment, and assist the audiovisual program in general. The studio in Higgins Lab was updated, and significant new equipment was added. (By the way, there is no truth to the rumor that Scott and Dumas are referred to now as Captain Video and the Video Ranger. . . .)

A small room in the library was prepared to accommodate viewing stations; by spring 1972 five of these were in constant use and the room was overcrowded. Over last summer a much larger learning center was created in the library, capable of holding up to fifteen viewing stations. Right now there are

The IPI Revolution

In spring of 1971 several courses were first offered in a new format, called Individually Prescribed Instruction (IPI).

The IPI method represents a complete change from the usual lecture-instructor-classroom-centered instruction to a student-centered, self-paced learning format. Each student works at his own pace, mastering the course material in a prearranged sequence, one unit at a time. The only requirement is that he must demonstrate his ability in one unit before he is allowed to move on to the next unit and more advanced material. When the student feels ready, he comes to a learning laboratory where he takes an assessment (once upon a time it would have been called a test) on that unit. The assessment is immediately corrected in a one-to-one student-instructor relationship. If the student demonstrates mastery of the material, he is passed and immediately goes on to the next unit of instruction. If not, he goes back over the same unit until he masters it and passes a different assessment. The beauty of the system is that a student is never allowed to get in over his head. Student-to-student tutoring is an important part of the IPI program.

Each IPI study unit contains an introduction, a well-defined set of objectives, a list of instructional aids, illustrative problems, study problems with answers, and the types of response expected of the student. The instructional aids may include a primary course textbook, reference texts, programmed-learning manuals, videotapes, audio tapes, and/or computer programs. The student has a high degree of freedom with respect to choosing how, what, where, and when he studies. The responsibility for learning is where it must be, squarely on the shoulders of the student himself.

But what about the students' point of view? There are conflicting feelings, and a small minority of students seem unable to adjust successfully to the kind of self-discipline required in an IPI course. Most students, though, are in favor of the system.

"IPI changes the student from a passive to an active learner. It is relatively easy to sit in class and listen to three lectures a week. In IPI you have to make an active commitment to the material if you're going to get anywhere. You can't just barely pass—you have to master each increment of the material. You build up confidence with the material because you learn on your own. You also get more out of the instructor because you are working on a one-to-one basis. You get to use the faculty member more to your advantage. IPI is more in line with the way things are in the real world. You take on a real project and know what's expected of you at the end of the term. It takes initiative, but you progress at your own rate." That's what Ed Peczynski, '73, had to say after taking his first two IPI courses last year and tutoring one other. He continues:

"Tutoring a course helps the tutor as much as the tutee. You have to really know and master the material to tutor. You get to see things from a different point of view than when you first studied the material and thought you had mastered it. Students seem more responsive to their peers as tutors rather than faculty members."

"You get lots of confidence out of learning on your own. You learn a lot about yourself and about how to attack the course. I will take as many IPI courses as are available. Not every course should be taught this way, but it provides a good balance in your program. It makes for a more varied and interesting atmosphere to combine various methods of learning."

eleven stations in operation in that room. The center is c
fifteen hours a day, but even so there are not enough vie
stations to satisfy needs in the immediate future. This
approximately twenty courses were taught in the IPI for
involving some 3,000 students. At present over 400 videot
are available in the library learning center for student
During Term A this year, an average of 97 students viewe
least one videotape every day (including Sundays) at
learning center.

Videotapes are also being used in many traditional for
courses. Some faculty members videotape solutions to ho
work problems; others tape answers to examinations,
make these tapes available immediately after the exam.
advent of seven-week terms at WPI has meant the comp
revision of many courses, and the problems of adapting to
new timetable have been many. One beneficial result of
has been the determined search for more efficient ways to
available time. Video has been one significant means
increasing efficiency and learning.

Other Media. . .

Video is not the only audiovisual aid being used. One fac
member is employing audio-tutorial methods to teach
laboratory course in sanitary engineering. He prepares au
cassette tapes which are used to direct students perform
experiments in the laboratory. Other faculty are using au
cassettes as a means of giving directions to students as t
begin laboratory work. In all cases, the use of audio-tuto
methods has made it possible for students to come to
laboratory when *they* are ready to perform the work.

Other faculty are experimenting with the use of synch
nized sight/sound equipment, using 2 x 2 color slides
audio cassettes.

Video, Stage Three: The Cable

The next logical step in the development of educational vic
is the setting up of a campus-wide closed-circuit cable
system. During the summer of 1972 the WPI campus w
wired for learning. Underground conduits and cables conn
all campus buildings to provide for present and future nee
for closed-circuit cable TV and for hardwired remote co
puter terminals.

Right now a skeleton cable TV system is being installe
The learning laboratory in Higgins Lab is now using

rimental "dial-up" system: the instructor telephones the udio and requests a specific videotape, which is broadcast the studio to a monitor in the learning lab. There is great tial for this type of use of the cable; Oral Roberts ersity in Oklahoma has an extensive computer-organized om-access video cable system which works in similar on, though on a much larger and more sophisticated scale. here are many other projected uses for the cable system. munications on campus need improving, and the cable m can enable the broadcast of general information, uncements, and messages. Video could be transmitted any location on campus to the TV studio for taping. A nt access channel can be established, for discussion, ntations, editorials, and entertainment. (There exist, by way, several vigorous, student-oriented "underground" orks based on the use of ½-inch videotape. Recent rams from one of these agencies have included appear-s by such diverse and controversial people as Lieutenant am Calley and Abbie Hoffman, Ralph Nader and Berna-e Devlin, Julian Bond and Dick Gregory, not to mention ns for Consenting Adults." WPI does not subscribe to any hese services.)

There are also untapped possibilities for interfacing the puter system and the video network.

lucational" TV Off the Campus

ng spring 1972 a course entitled "The Nuclear Power troversy" was videotaped with a live, participating audi- (consisting mostly of high-school teachers). The resulting s were edited down to eighteen hours of video and since have been distributed widely as discussion material. As of writing nearly forty other schools have requested the use hese tapes. The course was sponsored by the Atomic rgy Commission and the Yankee Atomic Electric Com-y.

Another course, entitled "Marketing Management," was also videotaped with a live class. This course will be used off-campus as part of WPI's continuing education program. Video now enables WPI to easily offer a course at, for example, an industrial plant in Pennsylvania. The tapes are sent on a weekly basis, and the WPI faculty member who is teaching the course needs only to make a few trips to attend the class in person. This helps keep costs down and it enables the influence of WPI to be spread much farther. Another bonus of videotape is that the material normally can be used over again with only minor revision and updating, and this too frees up faculty time and helps increase the overall efficiency of the instructional process.

Labs and Learning Labs

It's easy to see how videotapes can replace lectures. But laboratories?

Video has, in fact, proved to be a significant addition to the time-honored laboratory approach to science and engineering education. It does not replace, but it most certainly has revolutionized the process.

The lab experience started in early 1970, when enrollment in a control engineering course increased to the point where it was impossible to schedule an analog computer laboratory in the traditional manner. There just wasn't enough time and enough computer capability under the normal time restrictions of 1:00 to 4:00 on Tuesday and Thursday afternoons.

So the mechanical engineering department took a daring step and decided to allow students to use the analog lab whenever they wished, on a twenty-four hour a day basis. Video was brought in as a means of answering the myriad questions that inevitably arise when a student patches a board and operates the computer for the first time. The normal introductory lectures and instruction on the use of the TR-20 computer were still given, but now students could reserve the computer whenever they wished by signing out a key for the laboratory. By careful scheduling of assigned problems, it was possible to accommodate up to 100 students in the one analog lab with only one TR-20 analog computer.

A television viewing station was set up in the lab, and a special videotape was created. A student could review the whole tape before starting an assignment, or he could dive right in and refer to particular sections of the tape to answer specific questions as they arose, because the tape is indexed by subject. Even though instructors were available during normal hours, students were encouraged to use the tape to obtain

Technical Talk

Videotapes produced in the WPI studio are recorded on 1-inch and ½-inch tape simultaneously. The 1-inch tape provides a good quality master which is later used to make multiple ½-inch copies as needed for student use. Usually a ½-inch copy is kept as a file master and the 1-inch tape is reused. Until recently, the only copy in existence was the one being used at the viewing stations. This was done in order to minimize costs.

The standard WPI viewing station consists of a Sony AV-3600 videocorder and a 18-inch monitor. These videocorders are of the reel-to-reel type and have proven to be very reliable in use; maintenance costs have been quite low. Videocassette systems have been explored, but the varying lengths of current productions and the need for new playback equipment have so far mitigated against the cassette.

The television system at WPI is strictly black-and-white, primarily for economic reasons—color recorders and monitors are only marginally more expensive than for b/w, but the cost of decent quality color cameras is out of sight. (Worcester State College, however, has recently opened a color studio on its campus.)

A viewing station costs approximately $900, including necessary wiring. New ½-inch videotape costs less than $20 for a one-hour reel. WPI studio costs normally run about $50 per hour. The total cost, therefore, to make an original 30-minute tape is less than $40, not including faculty preparation time. Duplicate 30-minute tapes cost $15. Most faculty members spend about the same amount of time preparing for a 30-minute tape as they would preparing for a normal lecture.

answers to their questions. The availability of the tapes permitted round-the-clock operation of the laboratory seven days a week. This simultaneously increased the operating efficiency of the computer and improved the quality of the learning experience, because each student was able to spend as much time as he wanted or needed learning to program and operate the analog computer.

This first experiment in using video aids for laboratories was immensely successful. It was also favorably regarded by students. Among other things, the lending of keys seemed to increase the students' feelings of responsibility in using the equipment and helped to reduce maintenance costs. This was the first "hands-on" use of videotape equipment by students, and it quickly spread to other uses in other labs.

Professor Leslie C. Wilbur, who teaches a basic laboratory course in nuclear engineering, normally had to spend many hours detailing the use of the radiation analyzer and other sophisticated radiation-detection devices, either to small groups of students or, often, to individuals. He put his instructions on videotape, and a viewing station was placed in the nuclear laboratory near the instruments. After this, Professor Wilbur was freed from the repetitive drudgery and had more time to devote to personal contact with his students.

The Continuous Lab

Recently the life sciences department instituted a whole new concept in laboratory procedure, the continuous laboratory, in a move designed to optimize student learning efficiency in a laboratory area which was limited both in space and in equipment. For courses in "Biological Science" and "Gen Physiology," a variety of laboratory exercises were requi but there was only one room with limited facilities availabl video viewing station was established and a number of t made, and these were relied on heavily to explain objectives of each laboratory exercise, detail the operatio the equipment involved, and in some cases show the res expected. This open laboratory now has different stud working simultaneously on many different exercises, wi consequent savings in the amount of equipment requ (elimination of duplicate setups) and, best of all, no decr in learning.

As an example of the continuous biology lab in operat one exercise has students view a videotape detailing dissection of the frog sciatic nerve and gastrocnemius mu while they perform their own dissections. The tape also sh the students how to operate the stimulator and oscillosc used for the display of nerve action potentials.

Before the video-aided continuous lab, the instructors to spend inordinate amounts of time helping students routine operations and problems. Now they are availabl respond to more specialized and individualized questions f students. Another benefit is that students need to spend time with difficult experimental procedures and are abl move more rapidly through each experiment.

Project Applications

Increasing importance is being given to project work students at WPI. One aspect of project administration tha emerged is the need of students to acquire certain skill areas of knowledge quickly, particularly with regard measurements and instrumentation. To help out studen this situation, Professor Kenneth Scott has inaugur PIMELL, a shorter way of saying Project Instrumentation Measurement Experimental Learning Laboratory.

The first of the PIMELL modular setups deals with measurement of humidity. Prepared programmed mate guide the student in the use of such instruments as an A Dewpointer, a sling psychrometer, and a hygrometer, while use and handling of the devices are graphically illustrate videotape. Once the student has become familiar with methods available to him to measure humidity, he may ch the method appropriate to his needs and sign out instrument for project activity. Other PIMELL modules being established or the measurement of temperature, p sure, flow, and so forth.

an Dumas in the control room of the Video studio

Responsibility From the Bottom Up

The overriding trend in educational practice today is toward more freedom: freedom in picking the method, the time, the place of learning. To be successful, this freedom must be accompanied by an increase in individual student and faculty responsibility. The heavy use of television and other advanced technological aids at WPI has helped provide students with this new freedom, and it has given them an opportunity to demonstrate increased responsibility. As the focus of activity leans more strongly to project work and the open laboratory format, learning now becomes the constant factor and time and method are variables.

An important factor in the success of the new methods is the support they have received from everyone — students, faculty, and administration. At some colleges, large and expensive television systems have been installed, but they are scarcely used. The reason is that only a few people saw — or see — any worth in those systems. There, considerations and opinions of students and faculty were not an integral part of the planning.

At WPI everything has grown from the bottom up. Faculty saw a need, initiated the use, created the demand; only then was significant investment made in the systems currently being used. Faculty have found new outlets for creative teaching efforts; students have readily accepted the new approaches; all over campus the interest and excitement of learning are accelerating.

Technology, at last, is beginning to pay back some of its debt to the educational process that has nurtured it for so long. □

We are looking over a second grader's shoulder d
reading and spelling lesson. The year is 1980. T
age 7, is seated before a 20-inch color television
equipped with a typewriter keyboard and a lightpen (a
like a small flashlight that can be pointed at the sc
indicate an answer). His instructor's face appears
screen, cordially greets him and asks his name. After T
types it out, the instructor says: "Well, Tommy, are yo
to begin?" The instructor now asks him to spell "
Tommy slowly types the letters, which instantly appear
screen. If he is correct, he is praised and then promp
spell a harder word, and so the lesson continues. If T
was wrong, the instructor will attempt to help Tom
where he went wrong.

THE FACE ON THE CLASSROOM WALL

During this entire lesson, Tommy will be the only
involved. The "instructor" is a computer, which will g
the face on the screen, supply the voice, and guide the
throughout. The results of the entire episode will be
out later for Tommy's "real" teacher (a live human be
examine and use in gauging Tommy's progress, to po
those areas where Tommy may need extra help or drill.

What makes this a lesson in 1980 rather than on
advanced classroom today is the face on the screen. It i
videotaped picture, for that could not be readily adap
different responses from Tommy. Instead it is an an
face generated by the computer itself. The use of a f
face (and other types of animation) will, naturally,
Tommy much more excited and eager to interact w
mechanical instructor — a big step over a simple prere
audio message.

by Stephen R. Alpert, '67

The Face

The face on the screen is one of the more exciting asp
the field known as *computer graphics*. Ever since man
to scratch marks onto the wall of a cave, he has cons
searched for more advanced tools to aid him in v
expressing his ideas. In recent years, computers have b
an important aid to many artists. In fact, the m
computer and its graphic display possibilities may b
artist's most interesting tool since the advent of oil paint

What problems must be overcome to produce co
animation of the sort mentioned earlier? The first prob
that of storing the face in digital form in the comp
memory. At this stage of the art, at least, a basic compr
is made. The face is considered as a series of polygons, u

Stephen R. Alpert, '67, is assistant professor of computer science at WPI.

ure 1

a maximum of six sides, attached together just like a er's web. Such a face is depicted on the cover of this issue. So far, things are relatively simple. However, when one or e points move, for instance when an eye blinks, these ions exert forces on the entire network of lines and the must distort in the proper direction and to the degree that uman face does. For each line in the figure, many ulations must be made to determine in which direction y connecting line moves and how far it stretches. sider: the lines toward the middle of the cheek must be y elastic, while those on the forehead are much more rigid. computer has to take all this into account if the animation be realistic. Many millions of calculations and a second or ater, the face appears on the screen transformed to its new tion.

The spider's web of lines that we have now does not look a face, so we next add hair, eyes, eyebrows, a mouth, and At the same time we add a source of light in front of the and shade the polygons according to their angle relative to light source (Figure 1). We now have a face that looks e-dimensional, but it has the appearance of being roughly ved from wood. So we apply some computerized sandpaper hading algorithm) to smooth off the sharp ridges, and the lt is a face with a much more lifelike appearance (Figure

All of these calculations must be done at each step in order create animation. In practical terms, this means that most nputer-generated "movies" are filmed a frame at a time and n speeded up to simulate the actual movement. Because of time scale involved, only the simplest of pictures can be ved directly off a computer display screen and still give a se of life. But with increasing computer speeds and program histication, this problem will be eliminated over the next years.

Anyway, now that we have generated a face that moves, "simply" add a voice to the face and the computer will talk us, eye to eye! Computer animation of this type will serve a prime tool in computer-aided instruction for elementary ool children in years to come.

The animation of the face illustrated here was done by d Parke at the University of Utah. The face is, in fact, that his wife, and Parke's young daughter recognized her mmy on the screen.

Figure 2

Interactive Graphics

Computer graphics have applications for grown-ups, too. Representative of the work being done in many places are two projects developed at Sanders Associates in Nashua, New Hampshire.

The first project is typical of the uses of interactive graphics systems in the command and control situation. Figure 3 shows the geographic boundaries of the various divisions of the Los Angeles Police Department. A dispatcher at a display console can select any given division, and then one-mile-square

Figure 3

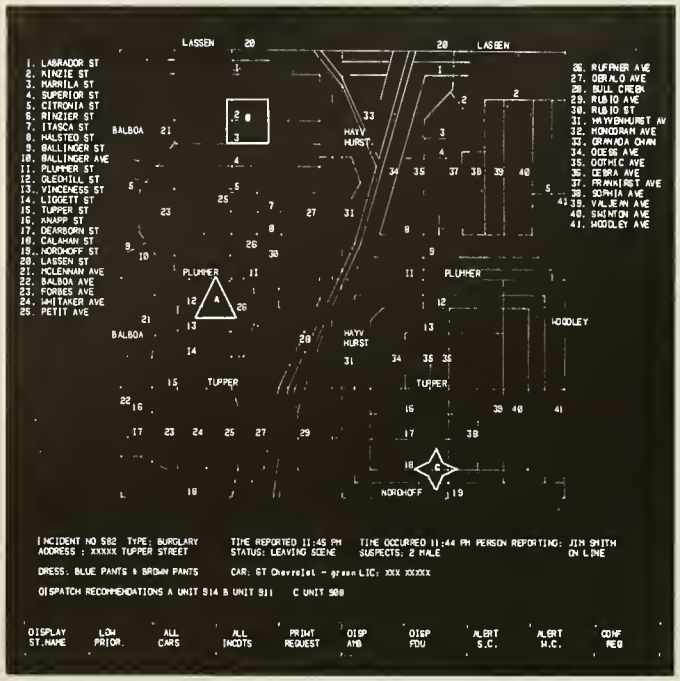
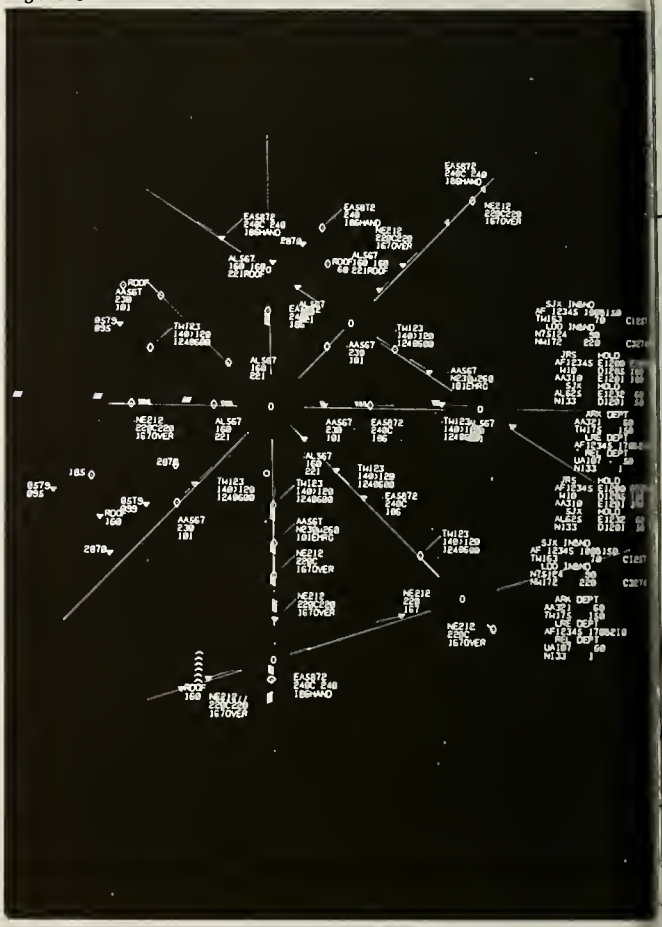


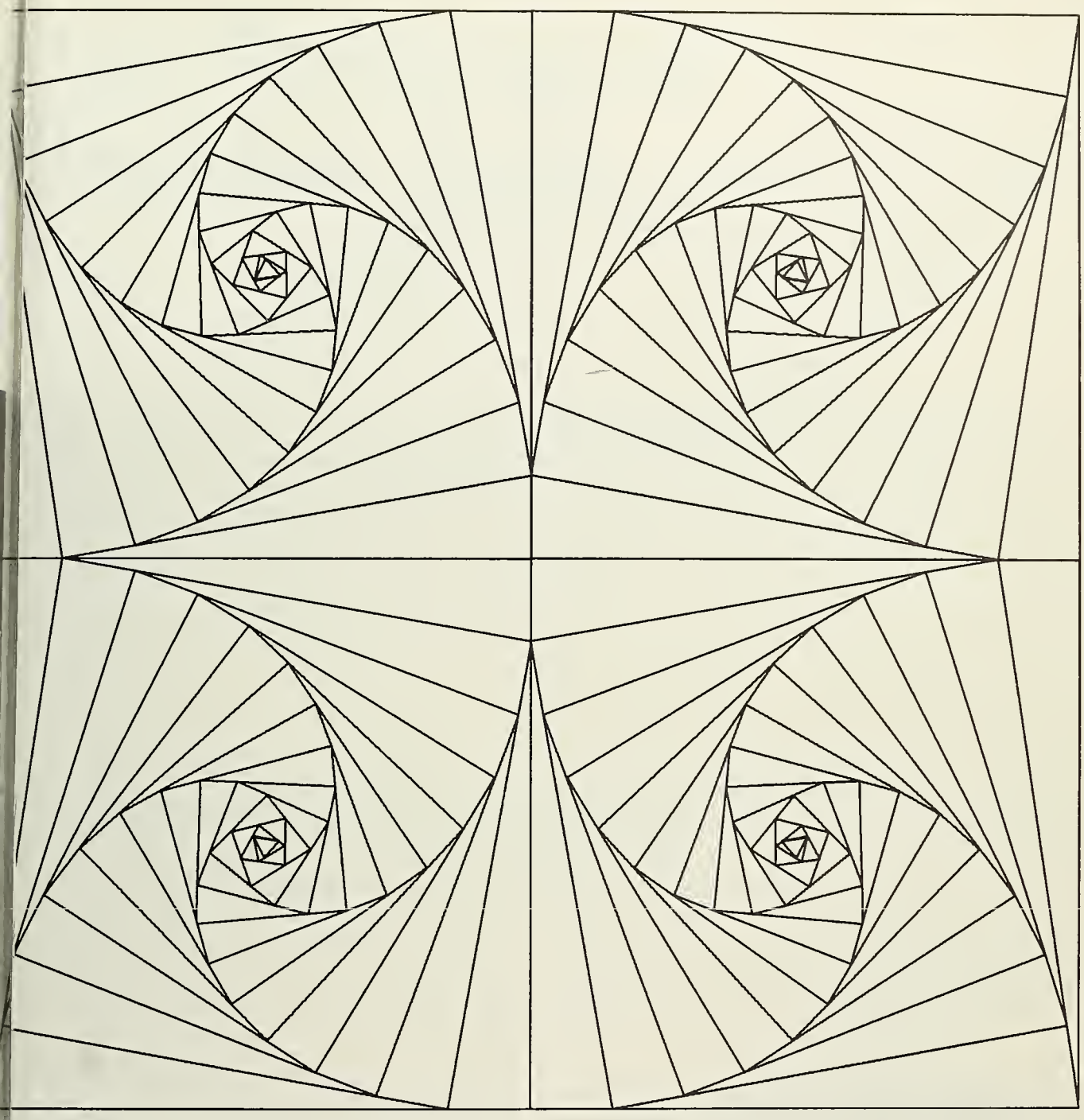
Figure 4

Figure 5



subdivisions for closer inspection. Figure 4 illustrates a detailed street map and incident-reporting format as an emergency vehicle dispatcher would see it. Three different types of vehicles have been highlighted to show their current location. The function boxes at the bottom of the screen are quick-action buttons that will perform a predetermined operation. For example, if the dispatcher selects the **DISP AMB** box, an ambulance will be automatically dispatched to the address reported in the incident-reporting section of the screen.

Another application with many future uses is as a part of computer simulation. Figure 5 shows a typical air traffic control pattern as it would appear on a radar screen. Each data block on the screen represents an aircraft under the direction of a particular air traffic controller. History tracks ar indicated as slash lines; up to six of these history lines can b shown at once. The tabular information at the right present the current situation in text form. With the use of this system air traffic controllers can be trained under realistic condition without endangering the lives of air passengers. If a mistake made here, no real crashes and no disruption of air traffic wi result.



ure 6

aphics at WPI

k is being done at WPI in several fields of study, notably nputerized plotting. Stereographic projections can be drawn ive a three-dimensional view of many atomic and molecular structures. Some of the beauty and symmetry of mathematics can be seen in graphs generated by simple equations (Figure 6), which are computer-drawn in a few minutes. A person would require several hours to produce the same picture.

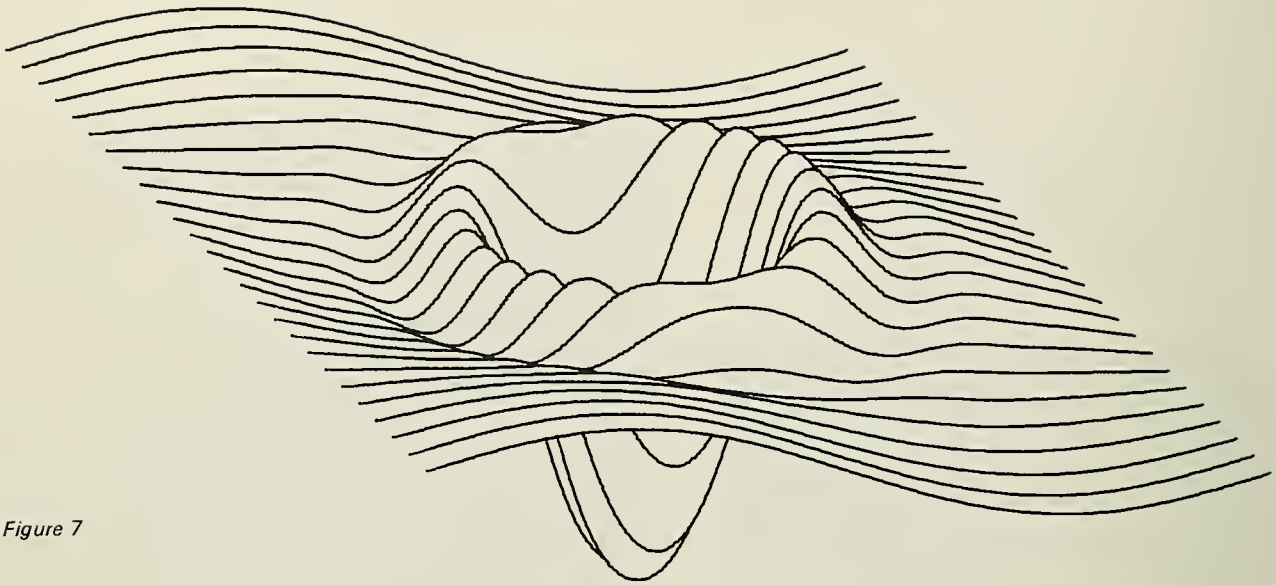


Figure 7

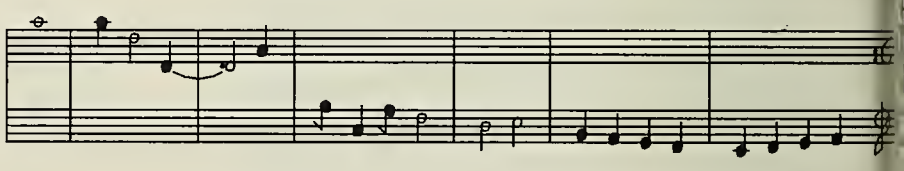


Figure 8

Another technique is called "interrupted line" plotting. This produces perspective drawings of three-dimensional surfaces (Figure 7) with a precision, accuracy, and speed that would make any draftsman jealous – and obsolete.

At the moment, three WPI students are attempting to use the computer to simulate the composition of music. This may sound old-hat, but these students want the computer to go farther than merely typing out the letters of the notes. They want the computer to produce its composition in full musical notation (Figure 8). They have not yet found a volunteer to play their creations.

These are but a few examples of the exciting work being done in computer graphics today. With the cost of computer use and display equipment decreasing rapidly, prospects are bright for even more mind-boggling uses of computer graphics in the future.

Perhaps you remember some of the space-ship scenes from Stanley Kubrick's film, *2001*, where often dozens of display screens would be in front of the astronauts, each screen giving a constantly changing animated display of one sort of data or another. Kubrick faked it for the film, with 16mm movies rear-projected on to each of those screens. But the day is coming when that may be the best way to present a pilot with the split-second information he needs. The technology for that will soon be a reality. □

The Passing of Physics One

With the coming of spring this year at WPI, one of the common memories of generations of WPI graduates has passed into the realm of memory. General Physics, the course which used to be required of all undergraduates, no longer be the same because of the departure of the two en who watched over it for those many years. Professor Kurt Mayer died suddenly on February 22, stricken with a heart tac while talking with a student in his office. Edwin nderson, the physics lecture assistant who set up demonstra-on and maintained lab equipment for 44 years, retired ebruary 1.

KURT MAYER was not a man easily forgotten. Walter B. Dennen, Jr., '51, spoke with several people about him ently. "When I asked if they remembered him, everyone nd in fond remembrance. Some could not offer specific nments, but they nevertheless remembered enough to ni."

Mayer was a native of Germany who joined the WPI ulty in 1942. Professor Allan Parker, head of the physics rtment from 1949 to 1972, talked about Mayer's relation-i with his students. "When a student came to him for help, ould give him quite a lot of help. But he wanted the ent to learn to think for himself, and Mayer would ually draw out the student so that he would end up ering his own question.

"He was most concerned with teaching, and with the sophy of physics. And though he was a philosopher, he a deep belief in the experimental method. He was really liked by his students, as an advisor and a counselor, gh in his earlier days at WPI he was best known as a rer, the most colorful lecturer at WPI."

Bill Lupoli, '61, reminisced about Mayer's classroom ence. "Professor Mayer would scan the lecture hall, smiling he while, and suddenly call out your name and ask you a tion. I always felt that he was not trying to involve us in ectures as much as he was attempting to keep us alert. n we entered his classroom or lecture hall, we would find blackboards filled with his outline and equations. If we t our time copying the material rather than listening to we had to be losers since his tests were always based on h he said. He was a tough man to keep pace with."

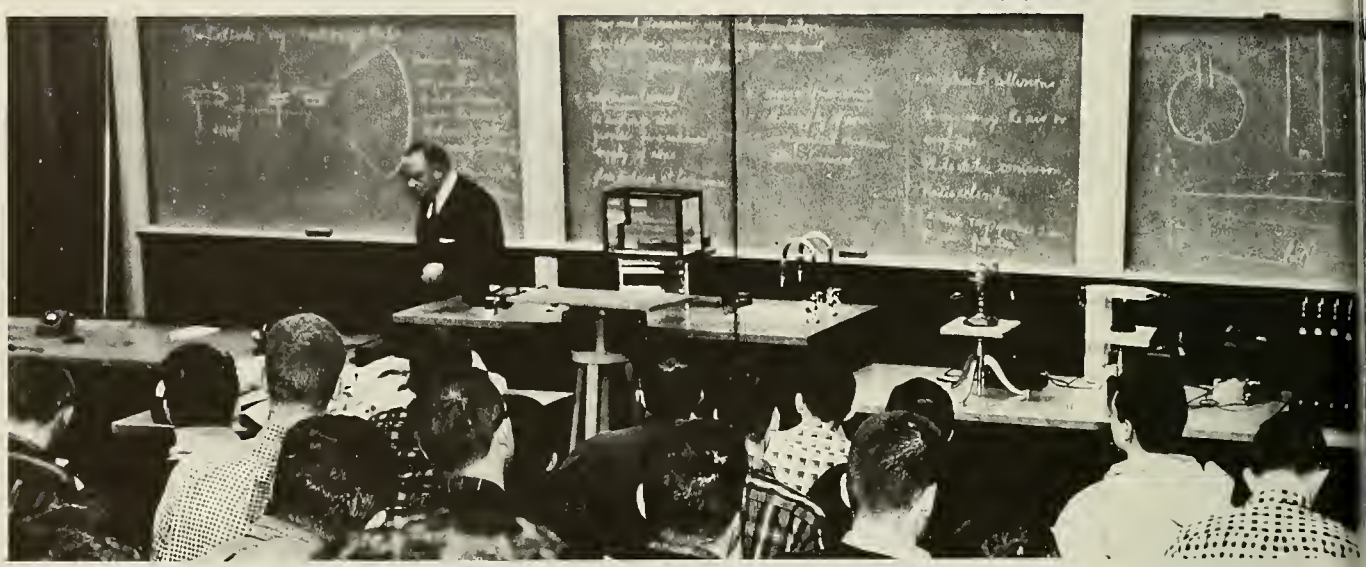
At times, Mayer did seem to have a fearsome reputation ng the student body. Vince Pace, '71, commented that seemed to enjoy overwhelming the freshmen, keeping us off balance. I'll always picture him entering the classroom with that massive volume of Newton's Laws under his arm. I finally concluded it was just a stage prop, but it sure worked on us."

The Rev. Ed Swanson, '45, has a colorful memory of Mayer's first year at WPI. "I remember vividly and with much appreciation being in one of Dr. Mayer's first physics sections. I was a freshman at WPI, it must have been in the spring of 1942, and he had only recently come to this country. He spoke with a thick German accent which sometimes made us smile, and his syntax left something to be desired. On one occasion, when he caught us smiling at one of his expressions, he said: *'Gentlemen, please do not laugh at me. I have not been in this country yet a long distance.'* That really broke us up. He was a good, kindly man, and I remember him with great fondness."

One of his students, Dr. Robert E. Seamon, '61, now on the staff of the Los Alamos Scientific Laboratory, held Mayer in special regard. He summed up his feelings in this manner:

"Perhaps the principal advantage to be derived from attending a small college like WPI is the opportunity for close contact with members of the faculty, among them tremendous personalities like Kurt L. Mayer, who holds a prized spot in the memories of many whose lives he touched. He was an unforgettable person; no one could have worked or studied with him without realizing his love for physics and the joy and enthusiasm with which he approached his academic responsibilities.

Prof. Mayer at his physics lecture—from endpapers of the 1960 Peddler



"Professor Mayer was the best teacher under whom I ever studied — a master from the viewpoint of his understanding of good pedagogy. His thoroughness as an instructor provided me with a good foundation in classical physics which was most important to me in graduate school. I believe he was most successful as a teacher because of his realization that one learns best through practice and repetition. He would give us problem set after problem set, most of which he graded himself. How often that little note — *'See me! KLM'* — appeared on his students' papers — just one measure of the hours of time he was willing to spend in personal conference with them. Those who took advantage of all the extra effort he put forth were undoubtedly the beneficiaries.

"We can remember him for many things: his immaculate appearance, his sharp dress, his use of practically every conceivable demonstration in P-3 lectures, his mechanics notes with which he would fill the blackboards on three walls, his pride in having walked to the Institute and arrived promptly on the snowiest of mornings; but most of all his concern for the physical, emotional, and educational well-being of his students. Those who kept in contact after they left the Institute realize how pleased he was to hear from his former students, his pleasure in seeing their names among the authors of scholarly and technical articles, and his joy in receiving reprints of their work. He always would inquire about my classmates by name and be disappointed if I had nothing n to report.

"As far as I am aware, his greatest professional concern recent years was to maintain Tech's reputation as an ou standing undergraduate institution rather than to compe with the large universities in graduate education. Profess Mayer was convinced that the finest contribution WPI cou make to the scientific and engineering communities was produce college graduates who could be counted on to do w in their careers — to stand among the best.

"Often we fail to tell others how much they have meant us until suddenly it is too late. I hope Professor Mayer realiz that he had a profound influence on my life, for in addition all that he taught me he urged me into graduate work a helped me find an acceptable and realistic accommodation interests in physics and music. Besides being grateful, I a proud that I feel able to acknowledge him as having been n friend."

Kurt Mayer's passing was deeply felt on campus. A meeting faculty and students who knew him decided that the best w to honor his memory, in view of his lifelong dedication teaching, is to establish a scholarship fund in his name. Alum who wish to contribute to the fund may do so in care of t University Relations Office at WPI.

WPI's Gadget Man Packs In His Tools

by Ernest Gutierrez

the aisle of electricity, Edwin Anderson rubbed a thick ass rod with rabbit fur and slowly swept the rod over the of his hand. "Static electricity," he proclaimed, as the s on the back of his hand reached up for the rod.

As a physics lecture assistant, Edwin Anderson has spent ears setting up experiments for WPI students to prove the tence of, and to measure, light and sound, heat and cold, tricity and magnetism, and other elemental forces.

He pointed out instruments as though introducing old, able friends. Many are no longer used, victims of progress. shift in WPI curriculum from a structured program to the I Plan stressing student initiative, plus a shorter term, have down on lectures.

But Anderson remembers years of busier days when his eriments regularly proved basic physics principles. "These hgs," he gave a sweeping gesture to the shelves crammed h instruments, "were all used for dozens of different eriments. The basics are the same. Some of these instruments really haven't been improved. The basic principles of sics stay the same."

In the beginning, Anderson intended the lecture assistant to be temporary and hoped to continue his formal cation. "But the depression came," he said. "I know the ic principles, but I never got the higher mathematics."

On a middle shelf in an aisle of mixed instruments, derson leafed through a dusty pile of barometric pressure rts. He found the one he was looking for — the day of the ricane of 1938. Next to the charts were a dozen dusty ometers. "We used to have the boys carry them up to crofft Tower to measure the difference in barometric ssure as you get higher."

"I collect antiques. Some of these instruments are antues. Some were old when I came here." He stopped near a old black projector that took large glass slides. It carried a te saying it was donated by the Class of 1897 in 1928. On a rby table Anderson pointed out the modern slide projector d today. The old projector was gathering dust.

Anderson said he will avoid the old projector's fate. After years of the science of physics, Anderson will devote much his retirement time to photography. "I really enjoy otography. So far, I've been taking mostly color slides."

He said he will be using some of the skills acquired in his work for his own pleasure. "You have to be everything to do this job — an audio man, a carpenter, an electrician."

In the busier days, Anderson preferred to build rather than buy equipment when possible. Two of his amplifiers were being used in a lecture while he was being interviewed. "I built them 15 years ago, and they're still working."

Will he miss the job?

"I suppose I will. I've enjoyed working with the kids. I call them kids, but I probably shouldn't. They're wonderful people."

"I told them I'd come back if they needed help with anything, but not on the first day of retirement. I want to sleep until 9 a.m. for a change."

Reprinted from the *Worcester Evening Gazette*

Of CATS and COWLS and WITCHES' COVENS

by Ruth Trask

It was Intersession again (described by someone at WI "January diversion from normality"), and there were so strange doings on and around the campus. About 165 cou were offered in the catalog, and some 180 were actually gi (!) — that's one of the interesting things that happens when one is compelled to do anything.

A year ago the *WPI Journal* offered a wide-ranging look the variety of subjects explored. This time we're going to you about three courses — courses which might be group (quite loosely) under the general heading of religion.

Introduction to Yoga

The heat in the windowless wrestling room at Harringt Auditorium rose to a stifling 80 degrees.

"The atmosphere in here is not exactly conducive to t practice of good yoga," announces Margaret Kranich, instructor of the course along with her husband, Dr. Wilm Kranich, the George C. Gordon Professor of Chemical En neering and department head at WPI.

"But we'll manage," she continues. "Everybody relax the mats while we listen to a lecture on Hinduism and Yoga

Dr. Kranich talks about the concept of Hinduism, reinc nation, and the yoga philosophy. He says that Hindus belie that people are reborn again and again into either higher lower life forms, and that how one lives his life determin whether he will have a good or bad karma. (According to t Hindu explanation, any apparently undeserved pleasure pain comes as a result of deeds done in a previous existence

He explains that priestly asceticism has been of prin importance in India. Cutting onself off from the endless whe of life, death, and rebirth in order to be at one with t universal spirit becomes the be-all and end-all of a Hindu yog existence. Some yoga practitioners are able to medita unceasingly for days, weeks, even years at a time.

Yogi ascetics live alone and exercise complete control ov their minds and bodies. They have no valuable earth possessions, believing that desire is the key to evil. In order t meditate undisturbed they find a firm place to sit an concentrate. Assuming the cross-legged lotus position wit head, neck, and spine erect and vision indrawn, a yo transports himself to ultimate peace.

Dr. Kranich's talk is over. The students who are lyin down sit up on the floor mats. The seated students stretch o their legs and shake them.

Mrs. Kranich tells the class to stand up and get ready f yoga exercises, warning everyone not to push too hard. After number of stretching exercises and a series of knee-stretchin bends, she feels that the students are ready for the ploug position.

The young yoga enthusiasts lie on their backs and pu their feet up over their heads with legs straight. About eight the twenty-five present manage to touch their toes to th floor.

"Not bad," comments Mrs. Kranich. "Now do the fish."

The students, still on their backs, arch up their chests an rest the tops of their heads on the floor.

"A good lung stretcher," observes the instructor, wh takes time out to teach the class yoga breathing.

"Don't breath too deeply or too long," she caution "There's a danger that you can become super oxygenated an take off on a trip that you don't expect."

After the breathing exercises she has everyone writhing i

ntal position mimicking cobras. When the "cobras" turn "cats" the exercise period is over.

erspiration drips off the participants, but no one is plaining of the heat or sore muscles. In fact, most feel in op condition, their limbs limbered, mental cobwebs oved, and their spines made more supple.

Mrs. Kranich tells them, "You are as young as your spine." king at the lithe and lively instructors (who, incidentally, d on their heads each evening), the class has to agree.

Joseph's Abbey

ks are "holier than thou." Monks have no sense of humor. ks are an anachronism in this age of men on the moon. Right?

Wrong! At least at St. Joseph's Abbey, a Christian astic commune in Spencer, Mass.

Brother Basil (the Reverend M. Basil Pennington), garbed long white robe, black tunic, and hooded bench-warmer et, greeted Prof. Donald Johnson's Intersession group in t of the abbey church.

He smiled, even though the students were a few minutes (Their very large bus had become unexpectedly trapped le a very small walled courtyard, but an expert bus driver itually jockeyed it out.)

"Welcome to St. Joseph's," said Brother Basil. "You're in time for the guitar service."

He ushered the group into a semienclosed section of the rch where the astonishingly modern and beautiful guitar ice could be heard but not seen. The singing and playing ed about fifteen minutes during which time the class could reciate the handsome stone architecture and stained glass dows which were visible over the top of the barrier wall.

Following the service the women were gently but firmly segregated from the men.

"I'm sorry," Brother Basil explained, "but the ladies will have to go with Brother Raphael while the men are shown through the main parts of the cloister and the abbey."

When asked why, he answered: "Because women aren't prospective monks."

So Brother Raphael led his flock to a charmingly paneled room where he told them about communal living as experienced at the Trappist community. He explained that a monk's day starts at 3:15 a.m. and ends at 8:00 p.m. Worship services, private meditation, and prayer are interspersed with periods of work and silence.

Work could be teaching scripture, making vestments and jams, or doing maintenance jobs.

He smiled. "Sometimes we do things that are not quite up to our potential," he said. "For instance for several years one of the brothers, who was a well-known artist outside, worked as a bricklayer when he joined the order. We needed bricklayers more than artists at the time."

Hoping not to give the wrong impression, he explained further. "We usually do find a niche where our talents fit in best. And we are not poured into a strict mold. Religiously speaking, for example, we range from the far left to the far right."

"Where do most of the monks come from?" he was asked.

"From the city," he replied. "The median age of the brothers is 38 and we have a waiting list. Actually," he continued, "a widower usually finds that he can adapt more readily to our way of life. He has already learned how to live with others."

Brother Raphael went on to say that the brothers were allowed to visit their homes if their parents were ill and could not travel to visit them at the abbey. Sometimes travel was allowed for study or to aid in the construction of a new abbey.

It was time to meet the men for a slide show which was to be presented by Brother Gerald. Along the way Brother Raphael asked, "What do you suppose this stone structure is?"

"It looks like a high well," a girl replied.

"It was a windmill once," he said. "We had a meeting and everyone thought that it would be a great place to put pigeons. For three days everyone thought that. Then somebody remembered what pigeons do. . . "

The visit to St. Joseph's was nearly over. But the students couldn't leave without a stop at the abbey gift shop. There they stocked up on the sinfully rich jam and fudge whipped up by the brothers during their work periods.

With each purchase the monk at the cash register gave a gift in return. He said, "God bless you."

Continued overleaf

"That Old Black Magic. . . "

Who lives in a black house in the woods, has a tombstone in the yard, and a skull inside the house?

If you guessed a witch, you'd be right. But if you thought it was a lady witch, you were wrong.

This witch is blond, has a pierced ear, deep blue eyes, and his name is Ted Rabouin. Although he's billed as the Warlock of Westboro (Mass.), he prefers to be called a male witch rather than a warlock. He admits to being the head of the witches' cult in New England.

As one of the speakers in Prof. Thomas Keil's witchcraft class, he fascinated his audience with tales of his psychic abilities, his use of tarot cards in telling fortunes, and his unusual home life.

He explained that electricity interferes with his natural powers so he does all his clairvoyant work and readings by candlelight. Mostly women and young people seek his services.

Rabouin loves cats and has a house full of them.

"Not because I'm a witch," he says. "I just like to have them around."

His real affection for cats is one reason he refuses to participate in black magic, because this type of witchcraft requires the sacrificing of animals. He is, in fact, a staunch supporter of the Antivivisection Society.

He also has strong feelings about conveying his authenticity as a witch. Known nationally, he has appeared on the David Frost television show and has met with a number of experts in psychic circles.

Another local witch, Ron Parshley of Worcester radio station WAAB, spoke about witchcraft as a religion. He believes that it frees a person's mind and offers him limitless opportunity. Ritual magic, he says, is the manipulation of energy and can be done by anyone. A witch, however, must do the more formal ceremonies.

According to Parshley, harmony is the main purpose of the practice of witchcraft. It can help heal an ill person or boost someone up the ladder of success. This process is called white magic and is one of the positive facets of witchcraft.

"I suppose you've heard about the nudity and orgies that take place at our ceremonies," he said. "The only reason for the nudity," he explained, "is to help each member of the coven receive increased psychic energy. Clothes get in the way by interrupting the energy process. I'm not saying that there is no sex at our meetings. After all witchcraft is based on concept of fertility. But when there is sex, it is responsib

He laughed. "If you still have inhibitions, you can alw join a cult that wears bathing suits during the ceremor That's the thing about wicca (witchcraft). You can do aln anything you want."

Mrs. Enid Hoffman, from the University of Connecti told a remarkable story of how she exorcised a bad spirit fi a bookcase wall in a student's apartment. The ghost had gall to follow Mrs. Hoffman home, gaze at her during her b and glower at her from her bedside.

She finally tired of this ritual and confronted unwelcome female guest, psychically, face to face.

"O.K., ghost, I'm stronger than you are," she said. " compassionate. You are not. You are evil. Leave this place. where you belong. You don't belong here."

The ghost, seemingly hesitant for a moment, was repo to have said, "I'm sorry." Then she vanished and was n heard from again.

"Exorcism is only a minor part of witchcraft and mag Mrs. Hoffman explained. "Actually some of the grea practitioners of magic are the *kahunas* or Hawaiian medi men. Many are said to be able to change the weather and with departed spirits who live again in other forms."

She warned of the psychic vampires among us. She that this type of vampire is full of expressed or unexpres self-pity. Such a person drains psychic energy from every he encounters, leaving his victims mentally and physic exhausted.

Mrs. Hoffman noted a number of psychic methods t can result in healing. One is a mind control method in wh people are trained to become more psychically aware. Migra headaches have reportedly been cured through this process. another method, subjects or patients are taught to control a bodily function, including their heartbeat, so that severe he attacks can be automatically averted.

The class was interested in the theory of reincarnati Mrs. Hoffman, who is quite convinced in the validity of t theory herself, gave the students a quick awareness techniq for mind regression, one that nearly always works.

So if a WPI student suddenly roars like a lion or talks l William the Conqueror, don't blame Aztec Gold or Jo Barleycorn. And don't call Worcester State Hospital. He probably just discovering who he *was*. . . .

Completed Careers

SELMA S. JEPPSON

Selma S. Jeppson, widow of George eppson, '97, former president and an of the board of Norton Co., ster, died in January. In 1941 the ons presented their home at One Lane to WPI. It is now the official nce of WPI's president.

IS WILLIAMS, '07

Williams passed away on January 13, following a very long illness.
was born in Foxboro, Mass., on March 384. He received his BS in mechanical eering from WPI in 1907. After serving ber of years as president of Standard Seal Corp., New York City, he retired ecame a consulting engineer.
was a member of Phi Sigma Kappa nity.

LLAN KING, '11

llan King of Pompton Plains, N.J., d away on January 19, 1973.
was a native of Washington, D.C. In he received his BS in electrical eering from WPI.
1954 he retired from Western Electric Kearny, N.J., where he had been a inspector since 1936. Earlier he had associated with U.S. Resettlement nistration in Pennsylvania; Consoli- Gas Co., New York; and United neers & Constructors.
. King was a life member of the Tele- e Pioneers of America and the American ute of Electrical Engineers. He was a ber of Tau Beta Pi and also had served ice president of the Northern New y chapter of the Alumni Association.
was the brother of Howard P. King,

VARD S. MARTIN, '14

ard S. Martin died January 5, 1973 in ester. He was 82.
r many years he worked as a mechanical neer at Norton Co. and Morgan Con- tion in Worcester.
Worcester native, he was a 50-year ber of Montacute Lodge of Masons and st master of all levels of the Scottish of Masons. He also belonged to the rican Legion.
uring World War I he was with the 29th neers at Fort Meyers, Va., and served them for a year in France.

ELLERY E. ROYAL, '16

Ellery E. Royal, 78, former superintendent of the Belmont Home in Worcester, died January 18, 1973 in Sarasota, Florida.

He was born in Harvard, Mass. After graduating as a mechanical engineer, he worked for Reed & Prince Mfg. Co.; became president of U.S. Screw & Stamping Co.; and later became affiliated with the City of Worcester from 1932 until 1968.

He devised mechanical equipment used by patients at the Belmont Home and was responsible for the transfer from the Home Farm to Belmont Home.

Mr. Royal was a World War I Army veteran and served with the Ordnance Corps. He was a member of Phi Sigma Kappa and a former member of the Alumni Council.

CLAYTON T. PIERCE, '20

Clayton T. Pierce, 77, passed away December 25, 1972 in Massachusetts.

He was born in Dalton, Mass., on Sept. 28, 1895 and later studied at WPI where he was a member of Phi Sigma Kappa Fraternity.

Prior to his retirement he was a self-employed insurance agent in Dalton.

ALFRED H. WESSLEN, '24

Alfred H. Wesslen, 71, a retired industrial engineer, died January 19, 1973 in Worcester.

At his retirement party, held in 1966, he was feted by the Ware Knitters 25-year Club as being the first employee on the payroll when the firm was founded in 1938.

A Worcester native, he graduated as a mechanical engineer from WPI in 1924. He worked for Crompton & Knowles; Gilbert & Barker Co., West Springfield; U.S. Finishing Co., Pawtucket, R.I.; American Woolen Co., Lawrence; Ware Valley Manufacturing Co., and E-Z Mills, Bennington, Vt., before joining Ware (Mass.) Knitters, Inc., as a consulting engineer.

He was a member of the Republican Town Committee in West Brookfield.

BURTON E. KELLEY, '27

Burton E. Kelley, president of CBF Systems, Inc., Covina, Calif., died on January 4, 1973. He was 67.

Mr. Kelley was born in Springfield, Mass., and later studied at WPI where he was a member of Phi Gamma Delta. Prior to his latest position, he had been associated with Commonwealth Management Consultants; U.S. Plywood-Champion Papers, Inc.; Ebasco Services, Inc.; and Best Foods, Inc.; all of New York City.

He was past president of the American Society of Insurance Management, Inc., and served as an insurance lecturer at eight universities. He also held the chairmanship of the American Management Association Insurance Division of Conferences and Seminars.

CLARE S. RILEY, '28

Clare S. Riley, 67, former manager of district sales with Hartford Empire, now Emhart Corp., Bloomfield, Conn., died January 6, 1973 in Clearwater, Florida.

He was born in Northampton, Mass. and later studied at WPI. During his career he was director of purchases for Metro Glass Bottle Division of National Dairies until his retirement in 1970.

Mr. Riley was a member of Alpha Tau Omega.

DONALD C. CONVERSE, '31

Donald C. Converse, 64, died on January 3 in Hyannis, Massachusetts following a long illness.

He was born in Bridgeport, Conn. After studying at WPI and MIT, he was employed at Builders Iron Foundry in Providence, R.I., and later in Philadelphia.

He then moved to Hyannis where he worked for the Colonial Candle Company. During his lifetime he also owned and operated a gift shop in Hyannis and a restaurant in South Yarmouth; founded the West End Businessmen's Association of Hyannis; operated his own construction business; and was employed as a mechanical engineer at Cape Cod Hospital.

Mr. Converse was a member of Sigma Alpha Epsilon Fraternity and a past president of the Hyannis Rotary Club.

CLINTON E. LEECH, '36

Clinton E. Leech of Summit, New Jersey recently passed away.

A mechanical engineering graduate, he was born in Springfield, Mass. on May 27, 1914. At WPI he was a member of Sigma Phi Epsilon, Tau Beta Pi, and Skull.

For many years he was with the Public Service Electric & Gas Co., Newark, N.J., where he was a planning and consulting engineer.

He was a member of the American Gas Association, the New Jersey Gas Association, and the Society of Gas Operators, New York City.

PAUL M. RUSSO, '71

Paul M. Russo, 23, died on January 1, 1973 in Thorndike, Massachusetts.

He was born in Palmer. In 1971 he received his BS in civil engineering from WPI where he was a member of Phi Kappa Theta Fraternity.

He was a member of the American Society of Civil Engineers and was employed by Tighe & Bond, Inc., Holyoke, Mass.

Your Class and Others

1907

Married: L. HERBERT CARTER and Mrs. Helen Rollins on January 7, 1973 in Menlo Park, Calif.

1910

CHARLES E. BARNEY writes that he received a lot of news concerning his classmates over the Christmas holidays for which he was most grateful. From Mrs. WILLIAM R. BELL he learned that her husband is ill and cannot write personally. She says that they fly to Paxton and Holden in the summer and spend winters in their "ideal" location in Sarasota, Fla. . . . ALVAN L. GROUT of Largo, Fla., who was the only 1910 man at the '71 reunion, hopes to see more at the 65th. He writes that he hasn't seen snow for years. . . . EDWARD A. HANFF and his wife, Tex, of Pittsburgh, are both well and enjoying retirement. . . . FRED L. HEWES of Old Bridge, N.J., poses the question, "Would you like to go around again? I wonder." Recently he saw CARL ATHERTON at the Kimball Towers in Springfield, Mass. Carl is alone but "philosophical." Fred also visited the Barneys in South Hadley. . . . LEONARD W. HOWELL, Eastham, Mass., retired from the insurance business last May and now lives with his daughter on the Cape. . . . OLIVER O. JACOBS is enjoying life and looking forward to the 65th class reunion. . . . IRVING L. PETERS summers on the Cape. His four children are college graduates, as are five of his ten grandchildren to date. . . . DANIEL H. REAMY of Fort Myers is enjoying life in Florida. He writes that he has twice traveled the world both east and west. . . . PAUL E. TWISS, Orlando, Fla., still drives on short shopping trips. He and his wife celebrated their 55th wedding anniversary last September. . . . MILLARD CLEMENT is "trying not to give up to old age." Mr. Barney says, "The same goes for the Charles Barneys in South Hadley."

1923

FREDERICK H. SCHEER, the former supervisor, engineering technical services, Westinghouse Electric Co., Metuchen, N.J., has retired.

1925

HARRY G. STANGE has retired from Public Service Electric & Gas in New Jersey.

1927

ROBERT L. PARKER writes that he is recovering nicely from a twenty-foot fall from the roof of a barn he was repairing. Injuries included a fractured hip and four pelvic fractures. He expects to resume his consulting work in Boston soon.

1928

FRANK E. BUXTON has retired from duties with New England Power Ser Co., Westboro, Mass. . . . ANDREW TOUSSAINT has also retired. He was w Transport Equipment Co., South Norw Conn.

1929

DIRAN DERANIAN is retired. He was w Heald Machine Co., Worcester.

1930

THEODORE W. JONES has retired a forty-four years of service with the N Haven (Conn.) Trap Rock Company, wh he was vice president for administrat During his career he designed a sto crusher and worked as a safety, materi and blasting engineer. Later he beca production manager and construction se ices vice president. . . . PAUL E. REYNOL has retired from Civil Service, Edgewo Arsenal, Md. He is a retired lieuten colonel, U.S. Army Reserve, Chem Corps.

1932

ELLIS R. SPAULDING is branch head Calspan Corp., Buffalo, N.Y.

1933

HENRY C. ASHLEY has retired as manag applications engineering, Chase Brass Copper Co., Cleveland, Ohio. . . . C Engineer EUGENE TEIR of Gardner, Mas is now retired after 31 years of service plans to do some free-lance engineering private firms.

1934

J. LEONARD BURNETT is product manag at Contempo Company, Cambridge, M . . . CHARLES S. FRARY, JR., is now w American Biltrite Rubber Co.

1935

C. MARSHALL DANN, chief patent cou for the du Pont Company, is the new pre dent of the American Patent Law Assoc tion. . . . WALTER B. EKLUND owns operates Eklund Associates, Wilbrah Mass.

Retiring early from a lifetime of prof sional engineering with the governme LADISLAUS T. JODAITIS has shifted his parallel avocation to complete a boo outlining his breakthroughs concerning th

:h:oric evolution of languages. Circum-
nt g taboos and comparative linguistics,
mary research data were the expres-
n of natural science (in its broadest
ns which persist in words of living
g ges composed in prehistoric times.
d is resides in Milton, Mass.

38

E ERICK J. BURG, vice president of
oct planning for Salton, Inc., New York
ty, was the idea man behind Salton's
p ar egg cooker, bun warmer, and the
ce ly introduced pizza keeper and yogurt
ak. According to a recent issue of *Ap-*
a e *Manufacturer*, Fred has been
va ed six patents on product components
d nother on the egg cooker design since
s rted out with Salton 13 years ago. . . .
EN Y M. RITZ was recently honored at a
n marking his 35 years as president of
& Plumbing Supply Corp., Worcester.
FRANCIS L. WITKEGE has retired as
Dep y assistant chief topographic engineer
r ans and programs development with
e S. Geological Survey. Upon retirement
r eived a special achievement award in
cc nition of his contributions as an
ag eer-administrator in the field of topo-
ap c mapping. Previously he was pre-
nt the meritorious service award of the
e tment of Interior. He was also granted
lif membership in the American Congress
n rveying and Mapping. Frank and his
ife orraine, are looking forward to trailer-
g hroughout the U.S., Canada, and
ex o.

39

fte 26 years of service with the AEC and
ro haven National Laboratory, JOHN H.
AN ASTER has left to become project
an ger and assistant director of the $76
illi n VLA (Very Large Array) radio tele-
o project slated to be constructed in
ev Mexico. He joined Brookhaven in
34 as chief of the engineering and con-
ru ion branch in the area. Later he became
dm istrative officer of the $30 million
ite ating Gradient Synchotron Project and
as lso in charge of the $48 million AGS
on ersion Project. Currently he is em-
oy d by the National Radio Astronomy
bs vatory.

40

RICE BOYD, who was a fellow engineer
Westinghouse Electric Corp., Baltimore,
Id retired in March. . . . LEONARD GOLD-
MI H currently serves as program manager
S ger-Kearfott Division, Wayne, N.J. . . .
EN ETH H. McCLURE works for K. H.
Mc ure & Co., Inc., Stamford, Conn., where
he chairman. . . . SUMNER MEISELMAN
wi th the national headquarters of the
Am ican Automobile Association in Wash-
ing n, D.C. . . . ROBERT B. NEWTON cur-
ren is employed by Westinghouse Electric
Co , Madison, Pa.

1941

NORMAN G. KLAUCKE has retired as manager of manufacturing and engineering at Acme Chain Division of North American Rockwell, Holyoke, Mass. Currently he is living on the Cape where he plans to pursue his hobbies in real estate and commercial fishing. . . . HILLIARD W. PAIGE, president of General Dynamics Corporation, was the featured speaker at the annual meeting of the South Shore Chamber of Commerce in Braintree, Mass. . . . WILLIAM F. PAULSEN has been made an engineering fellow at E. I. du Pont de Nemours Co., Wilmington, Del.

1943

JAMES H. PARLIMAN and his family have realized a dream—they have moved to Woodstock, Vt., and purchased their own craft and hobby shop, "The Whippletree." Recently Jim resigned from Booz, Allen & Hamilton as an associate research director.

Baharian, '44

Freese, '46

Gorman, '46

1944

ROY E. BAHARIAN has been elected corporate vice president in charge of engineering and purchasing, Diamond International Corporation, and will be headquartered in Stamford, Conn. In 1956 he joined Diamond as a project engineer. In 1963 he became assistant director of manufacturing for the New York Division. Later he was a manager, Woodenware Division in Stamford. Last year he was appointed chief engineer for research and engineering for Diamond International. . . . ALAN C. GAULT has retired from his duties as a U.S. Navy captain with the Civil Engineer Corps. . . . GEORGE D. WILLIAMS recently joined New England Gas & Electric Association, Cambridge, Mass.

1945

ANSON C. FYLER has been named honorary chairman of the 1973 Greater Hartford (Conn.) Open Golf Tournament, Aug. 31 through Sept. 3. He is chairman of the board and president of Arrow-Hart, Inc., and a WPI trustee. . . . JOSEPH F. TIVNAN, JR., is with Paper Trading Corp. of Worcester.

1946

PAUL V. FREESE has been appointed vice president of the Washington, D.C. office of Camp Dresser & McKee, Inc., environmental consulting engineers. Recently he was director of the Washington Water Resources Management Administration, which is responsible for water and wastewater control in the nation's capital. In his new post he will be working on his firm's municipal engineering in the area, in addition to responsibilities in connection with CDM federal and international projects. In 1958 Freese received the National Capital Award as the outstanding young engineer of the year.

PAUL F. GORMAN has been elected vice president-power (Boston) and general manager of the Boston office of United

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Double-Seal Ball Valves
Wafer-Sphere Butterfly Valves
JFC Control Valves
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Where Are You??

With the current roster of WPI alumni at around 10,300, it's probably inevitable that we can't keep track of them all. There are some 300 or so alumni whose whereabouts we don't know, and this means that we can't send them the *WPI Journal* or *WPI Newsbriefs*. The list on this page represents about half the people we've lost touch with. If you can give us information to help locate any of them, we would be most grateful. (The second half of the list will run in the August issue.)

James H. Clancy	1890
Frederic H. Leland	1895
Robert H. Taylor	1895
Edward L. Cullen	1896
Charles V. Walter	1896
Edward G. Beckwith	1897
Roy G. Lewis	1900
Harry W. F. Dunklee	1901
Winfred M. Adams	1902
Chester A. Bacon	1903
Herbert W. Tufts	1903
Elipidio De L. Werneck	1903
Manuel G. Rosado	1905
Ralph S. Forsstedt	1906
Walter P. Ingham	1906
George G. Whitney	1907
Elliott A. Allen	1908
Gilbert C. Lamb	1908
James G. Goodell	1910
Stephen M. Poutier	1910
James F. Thompson	1910
Ralph H. Bowers	1911
Martin H. Jachens	1911
Arvid I. Perterson	1911
William I. Randall	1911
Royal B. Libby	1912
Robert W. Mungall	1912
Franklin Wyman	1912
Stanley M. Gunn	1913
Charles O. Snow	1913
Edward H. Vance	1913
Harry D. Stephens	1914
Arthur L. Thurston	1914
Thomas W. Farnsworth	1916
Gilbert M. Ireland	1916
Joaquim De R. Junqueira	1916
Raymond H. Page	1916
Fred B. Carlisle	1917
Herbert C. Kelly	1917
Walter I. Stearns	1917
Edward L. Anton	1918
Frank J. Murphy	1918
Conant L. Starr	1919
Hobart A. Whitney	1919
George A. Bijur	1921
Forest M. Douglass, Jr.	1921
Milton W. Graff	1921
Joseph F. Scanlan	1921
Joseph T. Fanning	1922
Francis W. Harney	1922
Charles E. Martin	1922
Edward J. Witt	1922
Willard A. Gallotte	1924
Richard F. Whitcomb	1924
Kenneth G. Broman	1925
Tzu-Hzu Chou	1925
Charles E. Crang	1925
John J. Hynes	1925
Thomas F. Plummer	1925
Charles F. Stevens	1925
George C. Chow	1927
Yat W. Chow	1927
Ronald E. Jones	1927
Maxwell L. Stoughton	1927
Donald S. Bliss	1928
Gordon N. McColley	1928
Leo J. Melican	1928
Alvar O. Ericson	1930
Edward T. Fox, Jr.	1930
Francis O. Carlstrom	1931
Lewis S. Haskins	1931
James McWhirter, Jr.	1931
Arthur B. Brainerd, Jr.	1932
Edward F. Donohue	1932
Eino O. Leppanen	1932
George E. Oman	1932
Chester A. Werme	1932
Ellis R. Brown	1933
Stephen S. Haynes	1933
Thomas A. Hyde, Jr.	1933
Wright H. Manvel	1933
Thomas F. McLoughlin	1933
John J. Molloy, Jr.	1933
Charles H. Newsome	1933
William A. Michalek	1934
Raymond G. Desrochers	1935
Alvaro A. Silva	1935
Louis D. Soloway	1935
Edward Tavidian	1935
Russell H. Wood	1935
William F. Atwood, Jr.	1936
Thomas J. Healey, Jr.	1936
William Miseveth	1936
Jacob A. Sacks	1936
John H. Chapman	1937
Frank Ellsworth	1937
Iver T. Rosenlund	1937
Arthur A. Davis	1938
Russell Jennings	1938
Thomas E. O'Neil	1938
Irving W. Forde	1939
Laurence M. Howarth	1939
Fred J. Kraemer, Jr.	1939
William F. Payne	1939
Raymond B. Piper	1939
Charles S. Stevens	1939
Dr. Ronald S. Brand	1940
Lennart Brune	1940
Robert J. Cannon	1940
Jeremie Lafrance, Jr.	1940
Judson D. Lowd	1940
Joseph J. Platukis	1940
Bernard Polonsky	1940
Joseph C. Putelis	1940
Harry E. Stirling	1940
Alfred F. Andersen	1941
Burgess P. Brownson	1941
Lyle W. Carpenter	1941
Jerome E. Schread	1941
Chamroon Tishyanandana	1941
Frederick J. Bargiel	1942
Morris C. Chu	1942
David L. Hartwell	1942
Kenneth T. Hunt	1942
John M. Townsend, Jr.	1942
John J. Tyner	1942
William S. Allan, Jr.	1943
George Cagen	1943
Everett W. Dunlap	1943
Reed C. Fulton	1943
Herbert W. Hope, Jr.	1943
Clifford B. Moller	1943
Harold E. O'Malley	1943
Marshall B. Raybin	1943
Dr. George P. Scott	1943
Louis J. Baldini	1944
Richard T. Brown	1944
Dr. Daniel Koval	1944
Harold A. Krieger	1944
Peter E. Talley	1944
David M. Trotsky	1944
Donald M. Campbell	1945
Cmdr. Kenneth B. Hofstra	1945
Clifford E. Lanigan	1945
Leonard F. Moore	1945
James Taylor III	1945
Alvi T. Twing, Jr.	1945
Richard T. Walsh	1945
Bernard L. Beisecker, Jr.	1946
Irwin G. Benkert	1946
Gaetano Biuso	1946
John M. Considine	1946
Anthony L. Daoundakis	1946
Wilton A. Ericson	1946
Robert N. Gregoroff	1946
Walter H. Hatch	1946
Christopher A. Herbert	1946
William M. Hovenesian	1946
William J. Kelly	1946
Dr. Myer Krulfeld	1946
John J. Landers	1946
Alan Y. Levine	1946
Philip R. Loshin	1946
Dr. Karl M. Mayer	1946
Howard F. McCormick, Jr.	1946
Allan W. McCoy	1946
Peter M. McKinley	1946
Elton K. Morice, Jr.	1946
A. Lewis Rogers, Jr.	1946
Alvin M. Ross	1946
Sidney S. Sperling	1946
Edward Stokel	1946
Miczyslaw J. Waclawek	1946
Jack Wexler	1946
Maurice I. Young	1946
Jose R. Biamon	1947
August L. Flotteron, Jr.	1947
Roland H. Guay	1947
Ernest E. Kimball	1947
William Longmuir	1947
Vaikunth C. Thakar	1947
Benjamin B. Barker, Jr.	1948
David I. Caplan	1948
Neil H. Gebhardt	1948
Charles A. Heyelman	1948
Julian H. Jacobs	1948
Birger D. Lund, Jr.	1948
Paul J. Martin	1948
Ronald A. Moltenbrey	1948
William R. Olha	1948
Shou L. Pan	1948
Frederick R. Paul	1948
Leonard D. Rood	1948
Kenneth E. Whatmore	1948
Thomas H. Wyllie, Jr.	1948
Kinsley A. Ball, Jr.	1949
John H. Beckwith	1949
Russell P. Bradlaw	1949
Norman E. Cotnoir	1949
Edward Foley	1949
Elmer R. Griffith, Jr.	1949
Frederick S. Jenkins, Jr.	1949
William A. Julian	1949
John E. McCarthy	1949
Tsu-Yen Mei	1949
William H. B. Parr	1949
Harry J. Rogers	1949
Vernon H. Russell	1949

eers & Constructors, a subsidiary of eon Company. He became associated he firm in 1946 as an assistant project anical engineer. After becoming a :t manager, he was promoted to ger of the Power Department in 1966 amed a vice president of the Jackson oreland Division in 1969. A registered ssional engineer, he is also a lecturer ver plant economics and design on the y of Northeastern University's Gradu- chool of Engineering.

LCOLM A. MORRISON recently re- d a silver medal from Secretary of Com- e Peter G. Peterson for his accomplish- s as a supervisory primary examiner the Patent Office. He was cited for his onstrated outstanding initiative and in leading his art unit toward mean- examination of applications for ts in the computer area."

NALD L. NICHOLS has been named or for engineering at the Newport Laboratory of the Naval Underwater er. In his new position he supervises 650 professional engineers, techni- , and administrative support personnel. ined the New London laboratory as an onic engineer in 1946. Besides pub- g reports dealing with sonar systems ology and low frequency electromag- noise, he has filed seven patent appli- ns for underwater sources and receiving s.

OYD A. WYCZALEK presently works as chnical advisor, experimental safety le, General Motors Corp., Detroit, Mich.

949

MOND A. BRANDOLI is operations ager at Universal Photo, Schenectady, . . . CHARLES C. CHASE works as a rvisor for U.S. Steel Corp., Fairless Hills, . . ROBERT W. COOK serves as branch ager at Gould, Inc., Instruments Systems ion, Burlington, Mass. . . . JAMES M. SER has been named assistant to the ager of engineering and maintenance at -Geigy Corp., McIntosh, Ala. . . . RED HAPGOOD, JR., has been named uct group manager, lenses and machin- for the optical products division of rican Optical Corp. He joined the firm 949 and was later named director of ity control and was appointed lens plant ager in 1960. . . . GEORGE K. HOWE urrently an associate professor of co- ative education at Northeastern Univer- in Boston.

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IN N. JUREIDINI is with the Interna- al Licensing Department of General tric Co., New York City. . . . HAROLD CHMUCKI is a senior electrical engineer 'arner & Swasey, Worcester.... CHARLES SEAVER serves as director of physical t, Wright State University, Dayton, o. . . . PHILIP A. WILD has been elected ce president of Stone & Webster Engi-

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Serving the Ferrous and Non-Ferrous World Markets since 1888 as Engineers and Manufacturers of Rolling Mills, Morgoil Bearings, Wire Drawing Machinery and Furnace Equipment

neering Corp., Boston. He was also appointed manager of marketing for the company's power industry group. He joined the firm in 1956 and has served in various geotechnical and structural engineering areas as well as marketing.

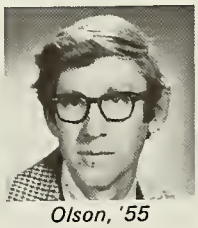
1951

WILLIAM T. BAKER is business manager for Bondstrand Products, a division of Ameron, Inc., Brea, Calif. . . . H. STUART DODGE is employed by the Space Systems Products Dept. of General Electric Co., Valley Forge, Pa. . . . LESTER A. SLOCUM, JR., is chief-architect-engineers, liaison branch, for the department of environmental services, government of the District of Columbia.

1952

PHILIP B. CROMMELIN has been named product manager, utility precipitators, at Research-Cottrell, Inc., Bound Brook, N.J. In his newly created position he will administer and promote liaison between customers and company field personnel. Since joining Research-Cottrell in 1954 he has been service engineer, application engineer, chief products engineer and manager of turnkey operations. He is a member of the Air Pollution Control Association.

Crommelin, '52



Olson, '55

1953

VYTO L. ANDRELIUNAS has been appointed chief, operations division, of the U.S. Army Engineers in New England. He is responsible for the operation and maintenance of $300 million worth of federal flood control reservoirs, four hurricane protection barriers, and the Cape Cod Canal. . . . Dr. ROBERT FITZGERALD, associate professor of civil engineering at WPI, is a new member of the Worcester Public Library board of directors. Fitzgerald, the author of a textbook entitled, *Strengths of Materials*, belongs to the American Society of Civil Engineers, American Society for Engineering Education, and the Society of Plastics Engineers. . . . JOSEPH A. HOLMES is with G.E.'s television components, Syracuse, N.Y.

1954

NEIL R. GLEBERMAN has been appointed manager of the Oil City, Pa., plant of Koppers Organic Materials Division. He had been chief engineer at the Follansbee plant since 1969. He joined Koppers in 1954. . . . JOACHIM HERZ is director, corporate product and market planning, North American Philips Corp., New York City. . . . LAURENCE I. SANBORN is with the Semiconductor Products Dept., General Electric Co., Syracuse, N.Y.

1955

ROBERT E. OLSON has been named manager of the fluid dynamics laboratory at United Aircraft Research Laboratories, East Hartford, Conn. He will be responsible for a variety of research programs related to gas turbine engines, noise reduction and pollution control. Previously he was chief of the gas dynamics section. . . . KENNETH H. RUSSELL, a chemical engineer with the ammunition development and engineering directorate, Picatinny Arsenal, Dover, N.J., was recently presented a special achievement award for "exemplary performance of duty" while assigned to Radford Army Ammunition Depot. As a member of a "should cost study team," his recommendations for improved operations resulted in a government saving of $3.5 million.

1956

PHILIP P. BEDARD is a research associate at Nova University, Dania, Fla. . . . CHARLES E. GUNN has been appointed Mayor of North Branford, Conn. He has served as deputy mayor since being elected to the council in 1971 and was designated mayor to complete the unexpired term of the previous mayor until town elections are held this year. Charlie writes that his new post is part-time and unpaid and that he keeps "bread on the table" by continuing as senior test engineer at United Illuminating Co., in New Haven. . . . GEORGE P. STROM was recently appointed director of manufacturing of Ortho Diagnostics in Raritan, N.J. He will be responsible for biochemical production, processing, packaging, and process development. Strom joined Johnson & Johnson in Chicago in 1967 as superintendent of distribution. Since 1970 he has held his present position as chief engineer, Eastern Surgical Dressings plant.

1957

JOHN M. BANDARRA, JR., is plant manager at Kendall Co., North Windham, Conn. . . . ROBERT F. I. CONTE is with Ladas, Parry, Von Gehr, Goldsmith & Deschamps. . . . Currently EDWARD M. DENNETT is sales manager, Oliver Division, Sangamo Electric Co., Atlanta, Ga., as well as sales promotion manager for Sangamo in all 50 states. During his fifteen years with the company he has been assistant regional manager in Atlanta; sales manager, automotive and industrial division, Springfield, Ill.; and district manager and sales engineer in Birmingham, Ala.

RICHARD P. JOHNSON is with Harveys of Falmouth, Inc., Falmouth, Mass. . . . ROBERT V. LEMAY, manufacturing manager, works at Data Interface, Danbury, Conn. . . . PAUL M. MITCHELL, SIM, serves as regional marketing manager at Dresser Industries, Inc. (tool group), in Cincinnati, Ohio.

LEON A. MORGAN has been appointed to the post of general operations manager at the United Illuminating Co., New Haven, Conn. He began work for the company following graduation and has served in a number of engineering positions. In 1968 he was named engineering manager. . . . THEODORE F. ROE is now an associate electrical engineer at Calspan Corp., Buffalo, N.Y. . . . ROBERT D. TENT is division engineer, Undersea Services Division (diving), at Fluor Ocean Services, Inc., Houma, La.

1958

PERRY E. JOSLIN is currently the owner and president of Joslin Dodge, Inc., Pittsfield, Mass. For the past seven years he was chief project engineer with the National Aeronautics and Space Administration program at Hamilton Standard Co., Windsor Locks, Conn. . . . MICHAEL P. MULLO is now with General Systems, Waltham, Mass.

WILLIAM A. RABINOVITCH has been selected as one of eighteen students to join the Whitney Museum of American Art Independent Study Semester Program in New York City. Upon completion of the program he will receive his MFA in painting from the San Francisco (Cal.) Art Institute. Rabinovitch is slated to be listed in the 1973 edition of *Who's Who in American Art*. . . . DAVID A. RYAN is with Martin-Marietta Corp., Orlando, Fla.

1959

The name and biography of DR. JOSE D. BRONZINO, associate professor of en neering at Trinity College and director of bioengineering program at Rensselaer P technic Graduate Center, Hartford, Co have been selected to appear in the 19 edition of *Community Leaders of Amer* The book is published annually to recogn outstanding persons who have contribu

Hear! Hear!

In 1961 Ralph Guertin received his BS in physics from WPI where he graduated summa cu laude at the head of his class. By 1969 he had completed his doctoral thesis at Yale. Tod he can be found teaching theoretical physics to graduate students at Rice University Houston, Texas.

A nice success story as far as it goes. An outstanding student has developed into an ou standing professor.

But Dr. Guertin's story is more than a success. It is a miracle. He is the first totally de person in this country, and possibly the world, to hold a full-time professorship in a heari college.

How can a man who lost his hearing at the age of seven hold such a demanding position one that requires the verbal give-and-take intrinsic in a classroom situation?

"It's because of the women in my life," he says. "Whatever success I have had is due them."

He admits quite candidly that he owes his normal speaking voice to his mother, Mrs. Ire Nash Guertin. After a disastrous childhood bout with meningitis and measles which result in his hearing loss, it was she who kept him talking naturally and corrected him when he erre

According to his colleagues at Rice University, today Dr. Guertin speaks normally duri his lectures. He even finds time for spirited question-and-answer periods answering whatev questions his students may fire at him. (An A+ for Mrs. Guertin and her speech lessons!)

Another woman who helped him along the road to success was Miss Chiyona Kinoshi who taught him lip-reading at Clarke School for the Deaf in Northampton, Mass. When I entered the school in 1947 he knew nothing about lip-reading whatsoever and at first refus to try it, always insisting that his hearing would return some day. But Miss Kinoshita w patient, determined, and compassionate. In the end she won and so did young Ralph Guerti

Now he reads lips so proficiently that he often has the feeling that he can actually hea And people with whom he is speaking are astonished because after they say a couple words, he can comprehend the whole sentence before they finish.

His academic excellence and his unusual ability to communicate led him to a number interesting jobs after his graduation from WPI. For several summers he worked as a solid sta physicist at the U.S. Naval Ordnance Laboratory in Maryland and at the National Bureau Standards in Washington, D.C. Later he served as a research assistant in the physics depar ment at the Middle East Technical University at Ankara, Turkey, and as a research assista at the University of Nijmegen in The Netherlands.

Language was no barrier. He learned Turkish and could lip-read it in no time. He didn have to learn Dutch because they spoke English at the university where he was employed.

Dr. Guertin can also lip-read French. He is even able to understand an Argentine stude in one of his classes who speaks with a Spanish accent.

Oddly, the toughest accent for him to lip-read is British. He says, "It shows on their lips!

Following his stint in Europe and after receiving his PhD from Yale, he became a post doctoral fellow at the Lawrence Radiation Laboratory at the University of California at Berkele While there, Prof. Geoffrey Chew recommended him to officials at Rice.

Any doubts the Rice representatives may have had about their new teaching prospec promptly disappeared after they heard him deliver a lecture. They were, in a word, impresse

Any lingering doubts that Dr. Guertin may have had also have disappeared since he ha been at the university. He is quite convinced that he has no further communication problem to surmount. He plans to make teaching his career.

Should he waver, he has two more ladies to turn to. One is his wife, Nu Nu Mae, whom h met at Yale while she was earning her master's in international relations and teaching he native Burmese. And the other is their four-year-old daughter who was born in The Nether lands.

As things stand now, it looks as though Dr. Ralph Guertin has already decided exactl where he is going and how to get there. If, indeed, he isn't there already.

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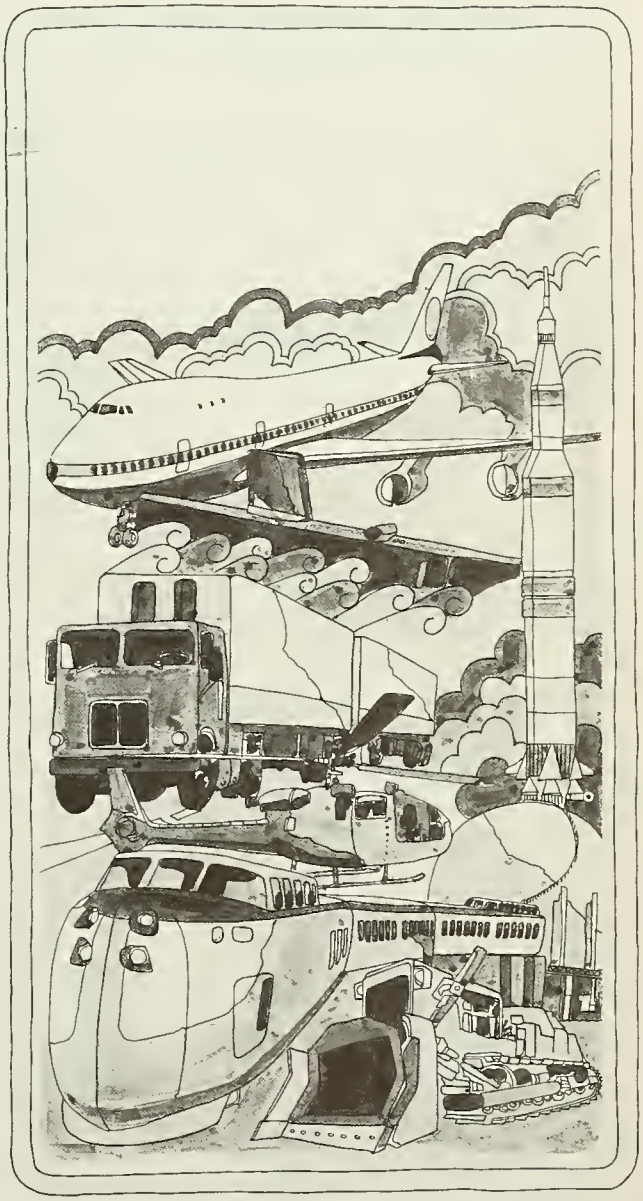

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to the life of their community, state, or nation through professional, community or civic activities. . . . ANDREW P. CUERONI holds the position of president and treasurer of Builders Realty Corp. of Massachusetts in Framingham. . . . WILFRID J. HOUDE is currently customer service manager, Hewlett Packard, Cupertino, Calif.

THOMAS F. HUMPHREY has been appointed Director of the Bureau of Transportation, Planning and Development of the Massachusetts Department of Public Works. Previously he helped develop planning and budgetary procedures for DOT agencies when he was in the office of the Secretary of the Federal Department of Transportation. He was also a cofounder of a transportation planning consulting firm whose clients included federal, state, local, and private agencies.

RICHARD P. KEATS is currently employed by Pro Electronics, Inc., Syosset, N.Y. . . . RICHARD J. RONSKAVITZ has been named traffic engineer for the City of Hartford, Conn. Since 1968 he has served the city as assistant traffic engineer. He joined the Connecticut State Highway Dept. in 1959. In 1964 he became traffic operations engineer for the City of Hartford.

1960

Married: JOHN B. CLARK and Miss Despina Chatis in Lawrence, Massachusetts in December. Mrs. Clark teaches piano and organ to private students. Mr. Clark is now head of the engineering department at Williams and Hussey Machine Corp., Milford, N.H.

PETER PIECUCH recently became editor of the *Journal of the Water Pollution Control Federation*, Washington, D.C. Since 1970 he had been associate editor. Earlier he was an assistant editor of *Environmental Science and Technology*, a publication of the American Chemical Society.

1961

JOHN M. BUCKLEY is with Buckley & Company, Wellesley Hills, Mass. . . . WILLIAM D. HOOVER presently serves as a project engineer at Decora, Fort Edward, N.Y.

Lt. Cdr. LEONARD E. PICKENS has been appointed as commanding officer of the NOAA ships Rude and Heck according to a recent announcement made by the National Oceanic and Atmospheric Administration of the U.S. Department of Commerce. The 90-ft. sister ships are the only ones of their kind in the nation designed to obtain information through wire dragging for underwater navigational hazards such as sunken wrecks, rocks, etc. Pickens assumed command of the ships on which he was previously executive officer, at the Atlantic Marine Center, Norfolk, Va.

Piecuch, '60

1962

Married: FRANCIS L. CORDEN to Miss Priscilla J. Jenkins on December 2, 1972 in Bloomfield, New Jersey. The bride is a graduate of Vassar College. The bridegroom is a member of the Norwich (Conn.) Power Squadron and is president of Destinations Unlimited, Inc., of Connecticut.

RICHARD J. Di BUONO presently works as chief, water quality section, New England Division, Corps of Engineers, Waltham, Mass. . . . LEWIS W. HUNTOON is a chemist at Benilite Corp. of America, Corpus Christi, Texas. . . . NELSON E. PARMELEE, JR., is employed by IBM Corp., in La Grangeville, N.Y. . . . JAMES N. PEISTRUP is a metallurgist at Cessna Aircraft Co., Hutchinson, Kan. . . . WILLIAM S. PROPERZIO works with the U.S. Public Health Service, department of environmental engineering, at the University of Florida, Gainesville.

DR. KENNETH ROETTGER, who usually teaches chemistry at Ottumwa Heights College in Iowa, recently tried his hand at teaching a witchcraft course. He says that "Basically, white witchcraft is nothing more than the teaching of positive thinking."

1963

GEORGE D. ELDRIDGE, who has been senior transmission engineer at United Illuminating, New Haven, Conn., is now chief electrical engineer. . . . Prof. JOSEPH R. MANCUSO, head of the management engineering department at WPI, was recently appointed to a three-year term as a director of the Worcester Cooperation Council, Inc. . . . HOWARD K. McDEVITT is now manager–optical engineering at Acuity Systems, McLean, Va. . . . Currently JOHN P. PISINISKI, JR., works as manufacturing manager at Union Camp Corp., Richmond, Va. . . . ALAN R. ROBERTS is an editor at Sperry Rand Research Center, Sudbury, Mass.

1964

ANTHONY CROCE is presently with the mechanical engineering technical support activity at the U.S. Army Electronics Command, Ft. Monmouth, N.J. . . . Frankel Enterprises, Philadelphia, employs DANIEL F. GORMAN. . . . WILLIAM J. HEALY has employment with the Hermetic Motor Products Dept. of General Electric Co. in Holland, Mich. . . . EUGENE S. KILLIAN has joined Crawford & Russell, Inc., Stamford, Conn. . . . BRUCE W. LARSEN works as staff engineer-long range planning, New England Telephone & Telegraph Co., Providence, R.I.

DAVID E. MONKS has been na general supervisor, production machi in the Kodak Apparatus Division of Eas Kodak Company, Rochester, N.Y. He jo Kodak in 1964. At one time he was a pr manufacturing engineer coordinating with the Kodak pocket Instamatic cam Last August he became the technical as ant to the superintendent of consumer p ucts assembly. . . . STEVEN B. SACC with MIT's Lincoln Laboratory. . . . Curre WILBUR W. WATERS, JR., is an emplo of General Electric Co., Syracuse, N.Y.

1965

RICHARD J. AIMONE is a project engi with the Air Correction Division of Unive Oil Products, Darien, Conn. . . . GREG F. BERRY is with G.E.'s Machinery Ap ratus, Schenectady, N.Y. . . . AYNUR CA is a self-employed civil engineer (exp import) in Istanbul, Turkey. . . . WALTER CHANG works for General Electric Co., L Mass. . . . LEONARD G. FELDMAN is Precision Control Products Corp., Walth Mass. . . . JAMES L. HAMMETT, serves as project engineer for Esso search & Engineering, Florham Park, N.

CHARLES F. HUNNICUTT now work supervisor-advanced switching systems Bell Telephone Labs., Naperville, Ill. . KENNETH E. JOHNSON is with Culli Engineering Co., Inc., Auburn, Mass. . RICHARD G. MOORE teaches at Timt lane Regional High School, Plaistow, N . . . RICHARD K. SEAVER is a senior er neer at Hamilton Standard Division, U Windsor Locks, Conn. . . . MADHUKAR VORA has been promoted to senior engir at the International Business Machines Co System Products Division Facility, Fishkill, N.Y. In 1962 he began work at I as a junior engineer working on advan devices. . . . BRUCE C. YUNG is a gradu student at the University of Virginia Charlottesville.

1966

Capt. ROLAND C. BOUCHARD, develo ment engineer, is stationed at Hill A Utah. Currently he is working for his M electric power engineering at RPI. . ROBERT COATES is presently working the Torrington (Conn.) Company in knitting machine needle department. He supervisor of two production departme Last summer he received his MS in mana ment science from Rensselaer Polytech Institute at the Hartford Graduate Center

PHILIP J. HOPKINSON has been pointed manager of advanced developm engineering at G.E.'s distribution tra former department with headquarters Hickory, N.C. He began work with the co pany in 1966. . . . CHESTER J. PATCH now works as a senior field engineer Bechtel Corp., San Francisco, Calif. . MICHAEL F. SALVINI is a wire mill sup intendent for Interspace Corp., in So Ohio. . . . Currently ROBERT A. SINU employed as a project engineer in the plas department at General Electric, Selkirk, N

ngineering . . . .
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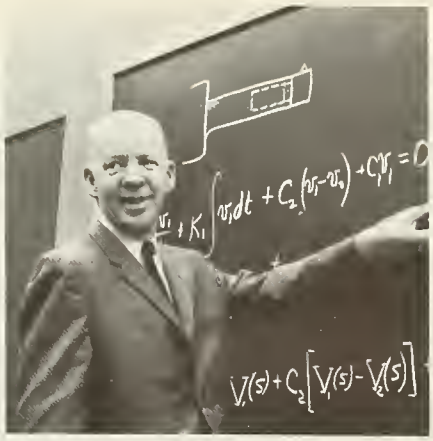

ving becomes more competitive . . . more compact . . . and complex, the world looks with increasing frequency to science ngineering for creative solutions to its wants and to its needs. at the Heald Machine Division of Cincinnati Milacron, creative rch and development engineers thrive on the daily challenge to le the metalworking industry with more productive, more effiand more reliable machine tools.

past, Heald has traditionally ced machines which have in cases surpassed industry's , but the demands are beg greater as the challenge nues. So Heald engineers con- to explore new techniques o design modern machine that reflect fresh ideas and ve thinking.

esults of this kind of engig can be seen in the Heald cts of today. Numerically olled Acracenters and Boreis that literally "think for themselves" while producing better quality parts in far less time. Heald Controlled Force internal grinders prove themselves as leaders by consistently attaining new levels of productivity and quality.

Heald's newest development, a rotary electro-chemical machining process, offers industry a practical way to perform precision machining operations on "difficult to machine" conductive materials such as high strength, high temperature alloys. Using electro-chemical machining, stock removal rates are unaffected by material hardness so production rates are substantially increased.

The continuation of this type of creative thinking and fresh ideas will be spurred on by the challenge of the 1970's and the need to meet the ever-changing requirements of our shrinking world.

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VANT T. THAKKER is design engineer . . Comstock Co., Pittsburgh, Pa. . . . OSEPH E. WHALEN is a member of chnical staff at Computer Sciences p Silver Spring, Md. He received his n physics from the University of last year.

67

rn: DONALD G. LUTZ and Miss Susan rdock of West Springfield, Mass. on mber 30, 1972. Mrs. Lutz is a graduate stfield Teachers College. Mr. Lutz is yed by Monsanto Chemical Corp., field.

ORGE E. C. BATTEN, JR., presently as director of Bi State Community Project, Hanover, N.H. . . . EDWARD ARPELLA, after a year's study at Institute of Technology, Chicago, eturned to Tiverton (R.I.) Junior- High School as an instructor in matics. . . . Ramapo College, Mahwah, employs JOEL B. KAMERON as an nt professor. . . . ALAN E. LARSON is or of computer services at Clark Uni-, Worcester. . . . ROBERT J. LOCKO is now a system engineer at Ray- Co., Fremont, Calif. . . . EDUARDO A. EZ holds the post of vice president easurer of Contreras & Mendez Conon Corp., Ponce, Puerto Rico. . . . R. PICARD serves as assistant area er for the Federal Highway Administ, Columbia, S.C. . . . WILLIAM F. PRATT has employment with New England Telephone, Warwick, R.I. . . . JOHN SOULLIERE is presently with the Boston office of the Foxboro Company. . . . ALAN H. SUYDAM is product design engineer, Product Development Group, Ford Motor Company, Dearborn, Michigan.

1968

ALBERT J. ATTERMEYER, naval architect, works at Boston Naval Shipyard, Boston. . . . MICHAEL J. BABIN has accepted the position of project engineer with Chemelex, Redwood City, Calif. The company deals with electrical heat tracing systems and water bed heaters. . . . ROBERT G. BALMER is at the Purdue University graduate school, West Lafayette, Indiana. . . . EDWARD F. CANNON, JR., has been named assistant director of athletics at Worcester Academy. He is also a member of the school's Science Department. . . . CARL G. R. CARLSON, JR., has received his PhD in mathematics from Stanford University in California. . . . GREGORY C. COX is a chemical engineer for the U.S. Navy at Naval Ordnance Station, Indian Head, Md. . . . DANIEL C. CREAMER works for the Pratt & Whitney Aircraft Division of United Aircraft Corp., East Hartford, Conn. . . . Esso Research & Engineering Co., Florham Park, N.J., employs JOHN D. CUNIC as a project engineer.

STEVEN C. HALSTADT, who is a second-year student at Amos Tuck School of Business Administration at Dartmouth College, has been elected an Edward Tuck Scholar. The award is the highest academic recognition granted by the school prior to graduation. . . . THEODOR A. HEIDT is an ensign with the Civil Engineer Corps (U.S. Naval Mobile Construction) out of San Francisco, Calif. . . . U.S. Army Capt. and Mrs. JOHN R. HILYARD, who have been living in Panama for over a year, are the parents of two children, John K., 2, and Chrisanne, 4 months. John's twin brother, JOSEPH F. HILYARD, is assistant research engineer for highway safety at the University of Michigan. GARY B. LARSON works for General Electric Co., Utica, N.Y. . . . EUGENE L. MURPHY is a planning assistant at the Massachusetts Science of Technology Foundation, Wakefield, Mass. . . . THOMAS J. PERARO, systems analyst, currently works for Aetna Life & Casualty, Hartford, Conn. . . . CHARLES A. RINALDI is with Northeast Utilities Service Co., Berlin, Conn. . . . LEO T. SPRECHER serves as a computer research analyst at GTE Labs, Waltham, Mass. . . . JOHN R. TRUDEAU is with General Electric Co., R&D, Schenectady, N.Y.

1969

Born: To Mr. and Mrs. PAUL S. WOLF, their first child, Howard Philip, on November 13, 1972.

VESA I. AUNIO works at General Electric Co., Fitchburg, Mass. . . . ANTHONY J. BAGLINI is with Turn-of-the-Century Antiques, Cambridge, Mass. . . . JEFFREY C.

JACK H. McCABE, '68 and RONALD J. GORDON, '67 recently joined forces and came up with some leading edge work that has led to the implementation of a computer package, Mini-Plan, that is now being sold by IBM to businesses throughout the country.

The work was performed at Hammond Plastics, Inc., Worcester, where McCabe is director of management information systems.

Their accomplishment is considered significant because it is the first time that a small company with a small computer has been able to perform the same type of financial analysis previously attempted only by large companies with large computers. In fact, practical planning models at Hammond can now be implemented on a System/3 computer as well as on a more recently initiated disc-based version.

At first it wasn't known if such a plan was feasible. But when Hammond decided to establish a corporate objective of increasing revenues by 20 percent across the board in 1971, it looked to its System/3 as a possible tool to reduce the repetitive manual calculations involved.

Gordon, who is a systems engineer for IBM, developed the conceptual model for Hammond Plastics' income projections.

"We proved this on a System/360 model 50," says McCabe. "And then we developed simplified, open-ended routines to express the profit and loss parameters in the English-like language of System/3. Ultimately we were able to program balance and cash flow projections directly in the RPG II language without any need for conversion."

Now Hammond has converted to a disc system and implemented Mini-Plan which offers a simple method for organizing planning data, for establishing computational logic to apply to the data, and for generating reports.

According to McCabe Mini-Plan makes it easier to make inquiries and extends the range of "what-if" questions the company can pose to the system. One such "what-if" question resulted in a $5,000 savings on a resins order that Hammond made.

The accuracy of the company's new financial models runs to within 3 to 5 percent of their projections. "This is accurate enough to be extremely useful," McCabe concludes.

Plastics World and *dp/Solutions* recently featured articles highlighting the work done by McCabe and Gordon.

BERNARD serves as assistant physicist at Calspan Corp., Whippany, N.J. . . . HEMENDRA R. BHATT is employed by United Engineers, Boston, Mass. . . . ALAN C. CHAMBERLAIN is with GTE Sylvania Electronic System, Needham Heights, Mass. . . . ROGER J. DASHNER is employed by Boston Edison Co. . . . Currently DAVID W. EATON is a programmer on-site in Annaba, Algeria for General Electric Co. . . . ALFRED FREEBERG works for General Electric Co., Pittsfield, Mass. . . . PETER T. GROSCH is a customer service representative for Exxon Company and is located in Pittsburgh, Pa. . . . GLENN E. HARKNESS is a transportation planner for Alan M. Voorhees & Assoc., Inc., Boston. . . . RICHARD P. ROMEO is section chief at Western Electric, North Andover, Mass. . . . ROBERT TEMPLIN is now a claims attorney with the Travelers Insurance Co., Hartford, Conn. . . . JAMES R. WALKER, JR., presently has employment with General Electric Co., Wellesley, Mass.

1970

FRANCIS L. BELISLE, JR., has been promoted to the rank of captain in the U.S. Air Force. He is assigned to the armament development and test center at Elgin AFB, Fla., as the center mathematical computer programmer. . . . JOHN R. BOYD is a biomedical engineer at St. Vincent Hospital, Worcester, Mass. . . . WILLIAM S. COBLENZ is with General Electric Co., Ceramics Branch, Metallurgy and Ceramics Laboratory, Schenectady, N.Y. . . . DONALD A. COLANGELO of Harland Bartholomew & Assoc., is located in Memphis, Tenn. . . . ROBERT C. COURNOYER teaches at Bishop Guertin High School, Nashua, N.H. . . . DOUGLAS J. DAYTON is with General Electric, Pittsfield, Mass. . . . PAUL F. DRESSER was recently promoted to Navy lieutenant (j.g.) while serving with Attack Squadron 125 at the Naval Air Station, Lemoore, Calif. . . . JOHN N. DUCIMO is a sales representative with U.S. Steel Corp., Electrical Cable Division, Worcester.

JOHN "JACK" GALE, assistant golf professional at Green Hill Golf Club, Worcester, recently led his team to victory in a pro-member tournament at the Port Malabar Country Club, Melbourne, Fla. The team finished with a 14-under par 57. . . . JAMES J. LAMBERT is with General Electric's Mechanical Drive Turbine Products, Fitchburg, Mass. . . . PAUL R. LaPLANTE serves as a research physicist at the U.S. Army Electronics Command, Ft. Monmouth, N.J. . . . KENNETH H. MAYMON works for General Electric Co., in Fitchburg, Mass. . . . MICHAEL T. MOYLAN is an engineering representative at Aetna Life and Casualty, Boston. . . . BRADFORD F. MYRICK serves with the U.S. Army in Germany.

CHARLES R. PICKETT, JR., is an engineer at Nuclear Power School, General Electric Co., Knolls Atomic Power Laboratory, Schenectady, N.Y. . . . RICHARD H. STEEVES, JR., works as plant supervisor for Dewey and Almy Chemical Division of W.R. Grace & Co., Woodbury, N.J. . . . ROBERT T. STULA has received his MS in chemical engineering from Penn. State University. . . . GARDNER D. TARBELL works for the Connecticut Department of Transportation in Hartford. . . . MICHAEL D. VARDEMAN is a graduate student at Colorado State University, Fort Collins. . . . FRANCIS A. VERNILE, who received his MS degree in structural engineering from the University of Connecticut last year, is now employed by the structural engineering firm of Fraioli-Blum-Yesselman of New England, Hartford, Conn.

1971

Married: I-CHIEH EDGAR WANG to Da-Ching Patricia Ma on January Worcester. The bride is a candidate master's degree in computer scienc WPI, where her husband is a doc candidate.

MARK A. AGLIO now serves as an sistant statistician for the Federal Conc tion and Mediation Service, Washing D.C. . . . GEORGE E. BLOCK, JR., w for New Haven (Conn.) Water Co. . . . JC W. CAPITAO is with G.E.'s Mecha Drive Turbine Products, Fitchburg, M . . . JOHN G. CLIFT works for Bent North Falmouth, Mass. . . . CORNELIU COLLINS has employment with New land Power Service Company, Worce . . . STEPHEN B. DOUGLAS is prese located in Venezuela, South America. WILLIAM N. IULIANO is with Ger Electric Co., Fitchburg, Mass. . . . ROB H. MANDELL is employed by Data Hudson, Mass. . . . PAUL B. POPINCH has a position with General Electric Wellesley, Mass. . . . JOHN R. SHOTLIF a graduate assistant at WPI. . . . STEVE WATSON works for New England T phone, Springfield, Mass. . . . ELDE YORK is an electrical field engineer with Philadelphia Electric Co.

1972

Married: LEONARD C. ANDREOZZI to Judith Ann Boyle in West Barring Rhode Island, on December 30, 1972. bride is a graduate of Clark University. bridegroom is a doctoral candidate chemical-physics at West Virginia Uni sity. . . . SAMUEL T. DAVIS and Miss B. Alexander on November 25, 197 Maynard, Massachusetts. JOSEPH SZLO was best man. WILLIAM SINGLETON, and MARK St. PIERRE, '71, and ED SH MAN, '71, were ushers. Mrs. Davis atten Becker Junior College. Her husband is ployed at General Electric Co., Erie, Pa. DANIEL J. HARRINGTON III to Miss L C. Wentzell in Jefferson, Massachusetts November 10, 1972. The bride is emplo by Warner & Swasey Co. Mr. Harringto a salesman for Sunnyside Motor Holden.

JAMES G. BROOKS, JR., is a nuc steam supply system engineer at Comb tion Engineering, Windsor, Conn. . . . JA A. BRUCKNER is assistant professor mathematics at Atlantic Union Colle South Lancaster, Mass. . . . JOHN BURKE is employed by the City of Worce . . . MARK A. FRITZ teaches mathematic Berlin (N.H.) Junior High School. . . . JO P. GALLIEN is employed at GTE Sylva Danvers, Mass. . . . Lt. STEVEN H. LUT a platoon leader with the 68th Engineer Ft. Bliss, Texas. . . . DAVID A. MEYER se as assistant manager, production contro American Optical, Southbridge, Mass. ANIL N. MODI works as an assistant b in the purchasing department for the Cit Worcester. . . . ROBERT F. WEIR is a s engineer for General Electric Co., Fitchb Mass.

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We don't feel you have to pay a lot get the high quality audio sound d features you want.

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Our speakers have a lot to do with They're the air-suspension type at deliver solid, natural bass unds. Each of those cabinets ntains a 12" bass woofer, a 1½" me mid-range, and a 1" dome eeter. And their fidelity is markable. Even a leading stereo agazine agrees. They've ven our speakers rave reviews.

When it comes to features, we el that our receivers atch up with the pular models in eir price category. lid-state. FET's. eramic filters. uning meter. Full- nction jack panels. uilt-in four-channel gh-level matrixing circuitry. Plenty of power (50 watts RMS per channel into 8 ohms with both channels driven simultaneously at 1 kHz for Model CR2743A). And plenty of controls for all functions.

Our changers are the best there are, because they're made by the best there are—Dual, Garrard & BSR McDonald. And they're made with all the right features—viscous-damped cue-pause control, calibrated anti-skate control, magnetic cartridges, and diamond styli.

If this sounds like the kind of audio equipment you're looking for, go see your local Sylvania dealer.

And listen to the Sylvania audio component systems. Depending upon the features you want, prices start as low as $279.50**.

Which just goes to prove, it pays to listen.

*System above includes receiver CR2743A, changer T2705W, and speakers AS125A. Mfr's suggested list price $659.50.

**Mfr's suggested list price.

GTE SYLVANIA

ania Entertainment
ducts Group, Batavia, N.Y.

Covers

Congratulations on your December 1972 issue. When I received it, I set it aside thinking it was an international magazine to which I subscribe, and which I usually take along on business trips to read more thoroughly. Imagine my surprise to open it on the Metroliner to Washington and learn the significance of the flags and our exchange students from City University.

I read every word of the students' comments, because I love London, and we have entertained British friends who had never been in America and they also had some weird ideas about our country.

I also enjoy your "Feedback" section. Good old Tech is certainly becoming a leader in engineering education.

Arthur C. Manning, '27
Upper Montclair, N.J.

The Brother Machine

As the mother of a freshman at WPI, I very pleased to receive the *WPI Journa* read with tremendous interest your art about "Bill and the Brother Machine. was particularly interested as I work p time for the Beverly Public School Dep ment in one of the grammar schools know of young boys who could use help of a "Big Brother."

Yesterday, when our adjustment couns came to visit the "problem" children in school I showed him the article and shared my interest in the program, as have four colleges in the immediate a He asked me if it would be possible obtain a copy of this article for him, this is the purpose of my writing to you.

Louise E. Menesale
Beverly, Mass.

REUNION 1973

THURSDAY JUNE 7—SUNDAY JUNE 10

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Sponsored by various divisions of Norton Company whose products are closely linked to the manufacture and fabrication of most automotive parts, this sleek racing machine will hit the U.S.A.C. championship trail from Indianapolis to Ontario, from the Pocono 500 to the Michigan 200.

Our entry in this internationally renowned sports event underscores the important role Norton products play in the automotive industry. It also reflects the combined talents, skills and competitive spirit of Norton's 18,000 employees. It is this same spirit of endeavor and a genuine desire to excel that has made Norton the world's largest and best known manufacturer of abrasives and a prime supplier of industrial ceramics, pressure-sensitive tapes and plastics and synthetics.

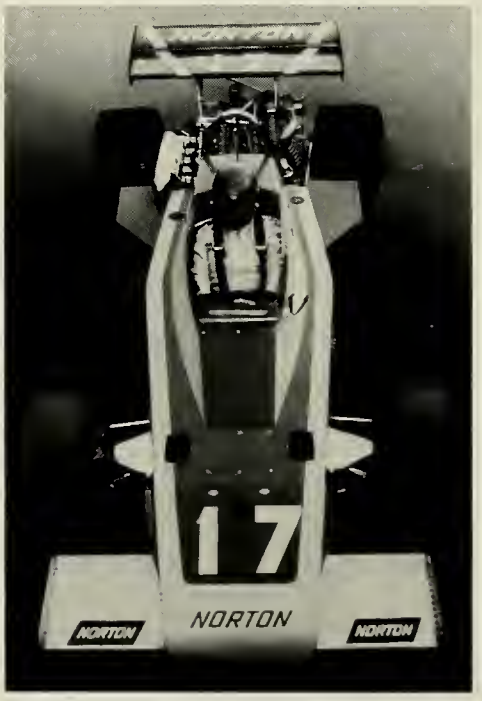
Keep your eye on the new Norton Spirit... an exciting symbol of a company and peaple that are on the move! Norton Company; World Headquarters, Worcester, Massachusetts 01606.

3

Norton grinding wheels are depended on for precision grinding and finishing of critical engine components, transmission parts, drive shafts, steering gear and front wheel suspension parts.

Norton coated abrasive belts, sheets and discs play an important part in grinding brake shoes, crankshaft lapping and in the preparation and finishing of all types of metal and fiberglass automotive panels.

Because they grip curved and irregular surfaces tightly and strip off quickly and cleanly, Norton pressure sensitive masking tapes are used extensively in the preparation and final painting of automotive bodies.



Norton industrial ceramics, including refractory cements, are widely used to line melting furnaces in which automotive engine blocks and other components are cast.

Norton abrasive materials are selected for their long life and increased productivity on a variety of automotive production applications including the deburring and finishing of gears, carburetor parts, connecting rods, ball joints, butterfly valves ond thermostats.

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NORTON

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